ZebraNet®

Wireless User Guide

for the Wireless Print Server, Wireless Plus Print Server, and Internal Wireless Plus Print Server

with printer firmware versions X.15.x and later,
or with some ZSPx firmware versions

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Contents

About This Document 9

Who Should Use This Document 10
How This Document Is Organized 10
Contacts 11
Web Site 11
The Americas 11
Europe, Africa, Middle East, and India 11
Asia Pacific 11
Document Conventions. 12

1 • Introduction 15

Printer Requirements and Print Server Features 16
Hardware 16
Firmware. 16
Supported Printer Models and Restrictions 17
Connecting to a Wireless Network 19
Access Point. 19
Supported Wireless Radio Cards 20
Supported Security Types. 22
Determining the Active Print Server 25
Viewing IP Addresses and the Active Print Server. 25
Selecting the Primary Network Device 26

2 • Configuration 29

Overview. 30
Configure Using the Network Setup Wizard 31
Install a Wireless Radio Card or Compact Flash Wireless Radio Card 38
Wireless Radio Card. 38
Compact Flash Wireless Radio Card 40

3 • Wireless Status and Settings 43

View Wireless Status through the Control Panel 44
LCD Link Status and Wireless Signal Indicators 44
HC100 Wireless Status Indicator Lights 45
Print Network Configuration Information 46
Network Configuration Label 46
HC100 Printer Configuration Wristband 47
View or Change Wireless Parameters on the LCD 48
Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware 48
Parameters for V53.15.x, R53.16.x, or later Firmware (ZM400, ZM600, RZ400, and RZ600 Printers) 50
Parameters for V50.15.x or V53.15.x Firmware (S4M Printer) 53
Restore Network Parameters to Defaults 55

4 • Troubleshooting 57

Wireless Error Messages 58
General Issues 58
Encryption and Authentication Issues 60
IP Issues 61

5 • WebView Web Pages 63

Web Page Overview 64
Home Page 64
View Printer Configuration 66
View and Modify Printer Settings 67
Network Configuration Screens 72
Directory Listing 77
Alert Setup 81
Establishing E-Mail Alert Messaging 82
Printer Controls 84
Print Server Settings 86

6 • ZPL Commands for Wireless Operation 93

^KC Set Client Identifier (Option 61) 94
^NB Search for Wired Print Server during Network Boot 95
^NC Select the Primary Network Device 96
^ND Change Network Settings 97
^NN Set SNMP 99
^NP Set Primary/Secondary Device 100
^NT Set SMTP 101
^NW Set Web Authentication Timeout Value 102
^WA Set Antenna Parameters 103
^WE Set WEP Mode 104
^WI Change Wireless Network Settings 106
^WL Set LEAP Parameters 108

~WL Print Network Configuration Label 109
^WP Set Wireless Password 110
^WR Set Transmit Rate 111
~WR Reset Wireless Radio Card and Print Server 112
^WS Set Wireless Radio Card Values 113
^WX Configure Wireless Securities 115
Supporting Parameters for Different Security Types 119

7 • SGD Wireless Commands 125

Overview 126
setvar Command 126
getvar Command 126
do Command 127
Command Structure 128
How to Send Multiple SGD Commands 128
card.inserted 129
card.mac_addr 130
ip.addr 131
ip.arp_interval 132
ip.bootp.enable 133
ip.dhcp.cid_all 134
ip.dhcp.cid_enable 135
ip.dhcp.cid_prefix 136
ip.dhcp.cid_suffix 137
ip.dhcp.cid_type 138
ip.dhcp.enable 139
ip.ftp.enable 140
ip.gateway 141
ip.http.enable 142
ip.lpd.enable 143
ip.netmask 144
ip.pop3.enable 145
ip.pop3.password 146
ip.pop3.poll 147
ip.pop3.server_addr 148
ip.pop3.username 149
ip.port 150
ip.smtp.domain 151
ip.smtp.enable 152
ip.smtp.server_addr 153
ip.snmp.enable 154
ip.snmp.get_community_name 155
ip.snmp.set_community_name 156
ip.tcp.enable 157
ip.telnet.enable 158

ip.udp.enable 159
wlan.adhocautomode 160
wlan.adhocchannel 161
wlan.associated 162
wlan.channel_mask 163
wlan.essid 164
wlan.firmware_version 165
wlan.ip.addr 166
wlan.ip.arp_interval 167
wlan.ip.dhcp.cid_all 168
wlan.ip.dhcp.cid_enable 169
wlan.ip.dhcp.cid_prefix 170
wlan.ip.dhcp.cid_suffix 171
wlan.ip.dhcp.cid_type 172
wlan.ip.gateway 173
wlan.ip.netmask 174
wlan.ip.port 175
wlan.ip.protocol 176
wlan.ip.timeout.enable 177
wlan.ip.timeout.value 178
wlan.keep_alive.enable 179
wlan.keep_alive.timeout 180
wlan.kerberos.kdc 181
wlan.kerberos.password 182
wlan.kerberos.realm 183
wlan.kerberos.username 184
wlan.mac_addr 185
wlan.operating_mode 186
wlan.password 187
wlan.preamble 188
wlan.private_key_password 189
wlan.roam.interval 190
wlan.roam.signal 191
wlan.security 192
Supporting SGD Commands for Different Security Types 194
wlan.signal_noise 201
wlan.signal_quality 202
wlan.signal_strength 203
wlan.station_name 204
wlan.tx_power 205
wlan.tx_rate 206
wlan.username 207
wlan.wep.auth_type 208
wlan.wep.index 209
wlan.wep.key1 210

wlan.wep.key2 211
wlan.wep.key3 212
wlan.wep.key4 213
wlan.wep.key_format 214
wlan.wpa.psk 215

Glossary 217

Index 221

Notes • _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

About This Document

This section provides you with contact information, document structure and organization, and additional reference documents.

Contents

Who Should Use This Document 10
How This Document Is Organized 10
Contacts 11
Web Site 11
The Americas 11
Europe, Africa, Middle East, and India 11
Asia Pacific 11
Document Conventions 12

Who Should Use This Document

This User Guide is intended for use by someone who needs to configure and use a wireless print server for use with a supported printer.

This version of the User Guide supports the ZebraNet Wireless Print Server, the ZebraNet Wireless Plus Print Server, and the ZebraNet Internal Wireless Plus Print Server with printer firmware versions X.15.x or later. Some features require X.16.x or later.

The following special versions of firmware or later also are supported. They are referred to in this User Guide as ZSPx firmware.

- ZSP994P
- ZSP999F
- ZSP1027F
- ZSP1056E
- ZSP1082F

For older versions of firmware, refer to the *Wireless Print Server User Guide*, part number 13422L-XXX.

How This Document Is Organized

The User Guide is set up as follows:

Section	Description
Introduction on page 15	This section provides an overview of the ZebraNet wireless print servers, including the Wireless Print Server, Wireless Plus Print Server, and Internal Wireless Plus Print Server.
Configuration on page 29	Use the instructions in this section to configure your ZebraNet wireless print server for operation.
Wireless Status and Settings on page 43	This section presents several options for viewing or modifying the wireless status, signal strength, or settings. You may also use:
Troubleshooting on page 57	This section provides solutions to problems related specifically to the wireless print servers.
WebView Web Pages on page 63	This section provides you with instructions for viewing the current print server settings.
ZPL Commands for Wireless Operation on page 93	This section contains ZPL commands for configuring and running the ZebraNet wireless print servers.
SGD Wireless Commands on page 125	This chapter provides a high-level overview of the wireless Set / Get / Do (SGD) commands and details on each SGD command.

Contacts

You can contact Zebra Technologies at the following:

Web Site

http://www.zebra.com

Technical Support via the Internet is available 24 hours per day, 365 days per year. Go to http://www.zebra.com/support.

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Document Conventions

The following conventions are used throughout this document to convey certain information.

Alternate Color (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference (blue text) to jump directly to its location.

LCD Display Examples Text from a printer's Liquid Crystal Display (LCD) appears in `Bubbledot ICG` font.

Command Line Examples Command line examples appear in `Courier New` font. For example, type `ZTools` to get to the Post-Install scripts in the `bin` directory.

Files and Directories File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

Icons Used

Identifies features that are available in printers with firmware version X60.15.x, X50.15.x, or later.

Caution • Warns you of the potential for electrostatic discharge.

Caution • Warns you of a potential electric shock situation.

Caution • Warns you of a situation where excessive heat could cause a burn.

Caution • Advises you that failure to take or avoid a specific action could result in physical harm to you.

Caution • (No icon) Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

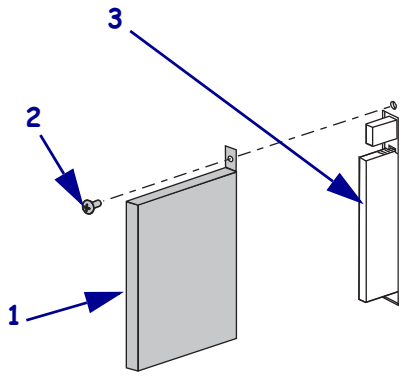
Important • Advises you of information that is essential to complete a task.

Note • Indicates neutral or positive information that emphasizes or supplements important points of the main text.

Example • Provides an example, often a scenario, to better clarify a section of text.

Illustration Callouts Callouts are used when an illustration contains information that needs to be labeled and described. A table that contains the labels and descriptions follows the graphic. Figure 1 provides an example.

Figure 1 • Sample Figure with Callouts



1	Clear plastic RF card cover (not used on all printers)
2	Screw
3	Wireless radio card

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1 Introduction

This section provides an overview of the ZebraNet wireless print servers, including the Wireless Print Server, Wireless Plus Print Server, and Internal Wireless Plus Print Server.

Contents

Printer Requirements and Print Server Features 16
Hardware 16
Firmware 16
Supported Printer Models and Restrictions 17
Connecting to a Wireless Network 19
Access Point 19
Supported Wireless Radio Cards 20
Supported Security Types 22
Determining the Active Print Server 25
Viewing IP Addresses and the Active Print Server 25
Selecting the Primary Network Device 26

Printer Requirements and Print Server Features

This section defines the requirements for using the different ZebraNet wireless print servers. It also defines features of and limitations to the wireless print servers on different printer models.

Hardware

Wireless Option Board A special wireless option board must be installed in your printer/print engine. Use a network configuration label to determine if an option board is installed or to determine which one is installed (see *Print Network Configuration Information on page 46*). Contact your authorized Zebra reseller for more information.

PCMCIA and Compact Flash Memory Cards PCMCIA memory or Compact Flash memory cards will not work and are not supported on the Wireless Plus Print Server. The Internal Wireless Plus Print Server does not include a slot for these card types.

Firmware

Supported Firmware Versions After a wireless option board is installed, your printer must be running a supported firmware version to access the features in this manual. See Table 1 for the firmware versions.

Wireless Print Servers with Older Firmware You may download the latest firmware appropriate for your printer to access the latest encryption features. With the Wireless Print Server, not all features in this manual may be available to you. Go to http://www.zebra.com/firmware for firmware download options.

S4M Printers with Older Wireless Option Board For the S4M printer, do not download firmware version V50.15.x unless you have the correct wireless option board installed. The older wireless option board does not support firmware version V50.15.x or later. See Table 1 for more details on this restriction and to determine if you have the correct wireless option board.

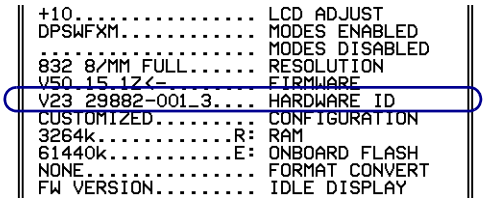
Supported Printer Models and Restrictions

Table 1 lists the requirements and restrictions for using any of the ZebraNet wireless print servers on specific printer and print engine models.

Table 1 • Supported Printer Models and Restrictions

Printer	Firmware Version	Support for	Notes and Restrictions
105*SL*	V60.15.2Z or later	ZPL	The ZebraNet wireless print server options replace the Wireless Card Socket Option (WCSO) in 105*SL* printers with a serial number of 6400357 or greater. Do not install a wireless option board on a 105*SL* printer with a serial number that is less than 6400357. **Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
	V60.15.8Z or later	ZPL and XML-enabled printing	
	D60.15.0 or later	APL-D	
	I60.15.0 or later	APL-I	
HC100	V54.16.1Z or later	ZPL and XML-enabled printing	Optional Internal Wireless Plus Print Server only.
110*PAX*4, 170*PAX*4	V60.15.2Z or later	ZPL	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
	V60.15.8Z or later	ZPL and XML-enabled printing	
	D60.15.1 or later	APL-D	
	I60.15.0 or later	APL-I	
R110*PAX*4	R62.15.*X*, R63.15.*X*, or later	ZPL and XML-enabled printing	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
R110*Xi*, R170*Xi*	R60.15.*X* or later	ZPL and XML-enabled printing	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
R110*Xi* HF	R65.15.*X* or later	ZPL and XML-enabled printing	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
R4Mplus	ZSP994P, ZSP999F, ZSP1027F, ZSP1056E, ZSP1082F, or later	ZPL and XML-enabled printing	**Wireless Print Server:** A printer with an existing Wireless Print Server can be upgraded to the latest R4Mplus firmware. Does not support CardBus wireless cards and IEEE 802.11g. **Wireless Plus Print Server:** Not available. **Internal Wireless Plus Print Server:** Not available.
RZ400, RZ600	R53.16.2Z or later	ZPL and XML-enabled printing	None

Table 1 • Supported Printer Models and Restrictions (Continued)

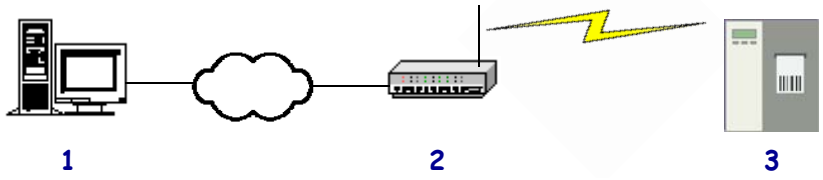
Printer	Firmware Version	Support for	Notes and Restrictions
S4M	V50.15.x or later	ZPL	**Wireless Print Server and Wireless Plus Print Server:** The printer must have the correct wireless option board installed to use the V50.15.x or later firmware. Printers that have a different wireless option board cannot use this firmware. To determine if the correct wireless option board is installed, view the `HARDWARE ID` line on a printer configuration label. The value reads `V23 29882-001_3` when the correct board is installed. Refer to the *S4M User Guide* for instructions for printing a printer configuration label.  **Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
	V53.15.8Z or later	ZPL and XML-enabled printing	
	E53.15.0 or later	EPL	
	D53.15.0 or later	APL-D	
	I53.15.0 or later	APL-I	
*Xi*III*Plus*	V60.15.8Z or later	ZPL and XML-enabled printing	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
	D60.15.0 or later	APL-D	
	I60.15.0 or later	APL-I	
Z4Mplus, Z6Mplus	V60.15.8Z or later	ZPL and XML-enabled printing	**Wireless Print Server:** A printer with an existing Wireless Print Server can be upgraded to X60.15.x. Does not support CardBus wireless cards and IEEE 802.11g. **Wireless Plus Print Server:** Not available. **Internal Wireless Plus Print Server:** Not available.
	D60.15.0 or later	APL-D	
	I60.15.0 or later	APL-I	
ZM400, ZM600	V53.15.5Z or later	ZPL	**Internal Wireless Plus Print Server:** Requires firmware versions X.16 or later.
	V53.15.8Z or later	ZPL and XML-enabled printing	
	E53.15.0 or later	EPL	
	D53.15.0 or later	APL-D	
	I53.15.0 or later	APL-I	

Connecting to a Wireless Network

The ZebraNet wireless print servers are Ethernet connectivity options for your printer. With one of these wireless print servers, the printer communicates with a wireless Local Area Network (WLAN) through a wireless radio card instead of being connected to a wired Local Area Network (LAN) with physical wires.

Figure 2 shows the network architecture of a typical WLAN setup. Two critical WLAN components for wireless operation are a wireless radio card and an access point. The ZebraNet Internal Wireless Print Server has a built-in wireless radio card.

Figure 2 • WLAN Setup with the ZebraNet Wireless Print Server or Wireless Plus Print Server



1	Computer (stand-alone or laptop)
2	Access point
3	Printer configured with a ZebraNet wireless print server and equipped with a supported wireless radio card (if applicable)

Access Point

A third-party access point forms a bridge between the WLAN and wired LAN. Select an access point that is compatible with the supported wireless radio cards that you will use with your ZebraNet wireless print server. Some access points may not support all ZebraNet wireless print servers.

Multiple access points can be used to extend the coverage of the wireless LAN. The reassociation capabilities of the IEEE 802.11b/g standard enable clients to move throughout the WLAN area and roam between access points. Reassociation can occur as long as the ZebraNet wireless print server is on the same network configurations and ESSID (network name) as the access point to which it is trying to connect.

Supported Wireless Radio Cards

Note • The ZebraNet Internal Wireless Print Server has a built-in wireless radio card. This section applies only to the ZebraNet Wireless Print Server and the ZebraNet Wireless Plus Print Server.

A supported third-party PCMCIA, Compact Flash™, or CardBus wireless radio card is required for the printer to qualify with the WLAN. After the wireless option board is installed in the printer, the wireless radio card inserts into a slot on this board. A wireless radio card is NOT provided with the ZebraNet Wireless Print Server or the ZebraNet Wireless Plus Print Server.

Note •

- Some wireless radio cards listed here may not support all ZebraNet wireless print server features.
- See Table 2 on page 22 or check with the card manufacturer to ensure that the card that you wish to use supports the wireless security type used on your WLAN.
- Some wireless radio cards may require specific firmware versions to support certain features. You may be able to download new firmware to your wireless radio card. Check with the card manufacturer for more information.
- Check the operating conditions (such as temperature and humidity) for the wireless radio card that you choose. If the card has more restrictions than the printer, this may limit the conditions under which you can operate the printer with a wireless connection.

The following wireless radio cards are supported at the time of this release:

Symbol® Technologies

- Spectrum24® Compact Flash wireless radio card LA-4137-1020-WW (the card uses an adapter and must have firmware version F3.91-69 or later)

  For instructions on how to install this card and the adapter, see *Install a Wireless Radio Card or Compact Flash Wireless Radio Card* on page 38.
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1000-US (card must have firmware version V2.90-58 or later)
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1020-US (card must have firmware version V2.90-58 or later)
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1120-US (card must have firmware version V2.90-58 or later)

Cisco® Systems

All Aironet® cards must have card firmware version 5.60.21 or later.

- 802.11g Aironet CB21AG CardBus wireless radio card (for the Wireless Plus Print Sever only; see Table 1 on page 17 for restrictions on the Z4Mplus, R4Mplus, and Z6Mplus)
- 802.11b Aironet AIR-PCMC340
- 802.11b Aironet AIR-PCMC341
- 802.11b Aironet AIR-PCMC342
- 802.11b Aironet PCMC350
- 802.11b Aironet PCMC351
- 802.11b Aironet PCMC352

Supported Security Types

Your WLAN can use any of a number of different types of security and encryption, or it can use none at all. This section shows which security types you can use with the different ZebraNet wireless print servers.

Note • Configuring a printer for WPA also allows the printer to be used in WPA2 environments.

ZebraNet Wireless Plus Print Server

Table 2 lists the security types that are supported by the Wireless Plus Print Server. Support varies by the card manufacturer and the card type. Select a wireless radio card that is supported by your wireless print server and that supports the security type being used on your WLAN.

Table 2 • Security Types Supported on the Wireless Plus Print Server

Security Type	Card Manufacturer			
	Cisco		Symbol	
	Cisco CB21	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
Open	Yes	Yes	Yes	Yes
EAP-FAST	Yes	Not Supported	Yes	Yes
EAP-TLS	Yes	Not Supported	Not Supported	Yes
EAP-TTLS	Yes	Not Supported	Not Supported	Yes
Kerberos	Not Supported	Not Supported	Yes	Yes
LEAP	Yes	Yes	Yes	Yes
PEAP	Yes	Not Supported	Yes	Yes
WEP (40 bit and 128 bit)	Yes	Yes	Yes	Yes
WPA - LEAP	Yes	Yes	Yes	Yes
WPA - PSK	Yes	Yes	Yes	Yes
WPA- EAP-FAST	Yes	Yes	Yes	Yes
WPA- EAP-TLS	Yes	Yes	Yes	Yes
WPA- EAP-TTLS	Yes	Yes	Yes	Yes
WPA- PEAP	Yes	Yes	Yes	Yes
WPA2 - LEAP	Yes	Not Supported	Not Supported	Not Supported
WPA2 - PSK*	Yes*	Not Supported	Not Supported	Not Supported
WPA2- EAP-FAST	Yes	Not Supported	Not Supported	Not Supported
WPA2- EAP-TLS	Yes	Not Supported	Not Supported	Not Supported

* Key rotation for WPA2 PSK is supported in firmware version V60.15.8Z or later, V53.15.8Z or later., V54.16.x or later, and RX.15.8Z or later.

Table 2 • Security Types Supported on the Wireless Plus Print Server (Continued)

Security Type	Card Manufacturer			
	Cisco		Symbol	
	Cisco CB21	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
WPA2- EAP-TTLS	Yes	Not Supported	Not Supported	Not Supported
WPA2- PEAP	Yes	Not Supported	Not Supported	Not Supported

* Key rotation for WPA2 PSK is supported in firmware version V60.15.8Z or later, V53.15.8Z or later., V54.16.x or later, and RX.15.8Z or later.

ZebraNet Internal Wireless Plus Print Server

Table 3 lists the security types that are supported by the Internal Wireless Plus Print Server.

Table 3 • Security Types Supported on the Internal Wireless Plus Print Server

Security Type	Supported?
Open	Yes
EAP-FAST	Yes
EAP-TLS	Yes
EAP-TTLS	Yes
Kerberos	Not Supported
LEAP	Yes
PEAP	Yes
WEP (40 bit and 128 bit)	Yes
WPA - LEAP	Yes
WPA - PSK	Yes
WPA- EAP-FAST	Yes
WPA- EAP-TLS	Yes
WPA- EAP-TTLS	Yes
WPA- PEAP	Yes
WPA2 - LEAP	Yes
WPA2 - PSK	Yes
WPA2- EAP-FAST	Yes
WPA2- EAP-TLS	Yes
WPA2- EAP-TTLS	Yes
WPA2- PEAP	Yes

ZebraNet Wireless Print Server

Table 4 lists the security types that are supported by the Wireless Print Server. Support varies by the card manufacturer and the card type. Select a wireless radio card that is supported by your wireless print server and that supports the security type being used on your WLAN. The Wireless Print Server does not support the Cisco CB21 radio card.

Table 4 • Security Types Supported on the Wireless Print Server

Security Type	Card Manufacturer		
	Cisco	Symbol	
	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
Open	Yes	Yes	Yes
EAP-FAST	Not Supported	Not Supported	Yes
EAP-TLS	Not Supported	Not Supported	Yes
EAP-TTLS	Not Supported	Yes	Yes
Kerberos	Not Supported	Yes	Yes
LEAP	Yes	Yes	Yes
PEAP	Not Supported	Yes	Yes
WEP (40 bit and 128 bit)	Yes	Yes	Yes
WPA - LEAP	Yes	Yes	Yes
WPA - PSK	Yes	Yes	Yes
WPA- EAP-FAST	Yes	Yes	Yes
WPA- EAP-TLS	Yes	Yes	Yes
WPA- EAP-TTLS	Yes	Yes	Yes
WPA- PEAP	Yes	Yes	Yes

Determining the Active Print Server

Most printers can have wired and wireless print servers installed at the same time. However, only one of the installed print servers can be active at any given time.

Viewing IP Addresses and the Active Print Server

The wired and wireless print servers have different IP addresses. The printer's control panel displays the IP address of the active print server (see *View Wireless Status through the Control Panel* on page 44). You can view the printer's web pages and send label formats to the printer through the active print server's IP address.

The network configuration label (Figure 3) displays the IP address of all installed print server devices and indicates the active print server with an asterisk (circled in Figure 3). To print a network configuration label, see *Print Network Configuration Information* on page 46.

Figure 3 • Active Print Sever on Network Configuration Label

Wireless Print Server

```
Network Configuration

Zebra Technologies
ZTC 140XiIIIPlus-200dpi
ZBR3258042

NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.030.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.02.19............. CARD FIRMWARE
00082131b6ba........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Wireless Plus Print Server and Internal Wireless Plus Print Server

ZM and RZ Printers

```
Network Configuration

Zebra Technologies
ZTC ZM400-200dpi ZPL
ZBR2834792

0.0.0 *............. OPTION FIRMWARE
Wired............... PRIMARY NETWORK
NO.................. LOAD FROM EXT?
Internal Wired..... ACTIVE PRINTSRVR

External Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT

Internal Wired*
ALL................. IP PROTOCOL
010.003.004.116.... IP ADDRESS
255.255.255.000.... SUBNET MASK
010.003.004.001.... DEFAULT GATEWAY
010.003.001.098.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
00074d2b4168........ MAC ADDRESS

Wireless
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
NO.................. CARD INSERTED
0000H............... CARD MFG ID
0000H............... CARD PRODUCT ID
000000000000....... MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
OPEN................ WEP TYPE
NONE................ WLAN SECURITY
1................... WEP INDEX
020................. POOR SIGNAL
LONG................ PREAMBLE
NO.................. ASSOCIATED
ON.................. PULSE ENABLED
15 ................. PULSE RATE
OFF................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Other Printers/Print Engines

```
Network Configuration

Zebra Technologies
ZTC 105SL-200dpi
ZBR12908662

1.10.1729  ........ OPTION FIRMWARE
NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.034.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.80.21............. CARD FIRMWARE
000e84c4f876........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

◯ = Active Print Server

Selecting the Primary Network Device

In the S4M, only one print server (wired or wireless) can be installed at a time. In other printers, you can select which installed device is the primary network device. The printer tries to use the primary network device as the active print server before trying the other installed options.

Check for Wired Print Server (X60.15.x only)

In printers with X60.15.x firmware, the default is for the printer to skip the check for a wired print server during bootup. This makes the wireless print server the primary network device. To change this and allow the wired print server to be the primary network device when it is connected, use one of the following to tell the printer to check for a wired print server at bootup time:

- the WIRELESS PS CHECK parameter on the control panel (see Table 10, *Wireless Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware* on page 48)
- the ^NB ZPL command (see *^NB* on page 95)
- the Primary/Secondary settings web page (see *Primary/Secondary Settings* on page 73)

Table 5 identifies which device becomes the active print server under different conditions.

Table 5 • Results of Check for Wired Print Server

If the Check for Wired Print Server is set to:	Installed and Connected to a Live Ethernet Network		Then the Active Print Server will be:
	Wired	Wireless*	
Skip	X	X	Wireless
	X		Wired
		X	Wireless
Check	X	X	Wired
	X		Wired
		X	Wireless

* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

Select the Primary Network Device (ZM400, ZM600, RZ400, and RZ600 only)

The ZM400, ZM600, RZ400, and RZ600 printers support the simultaneous installation of an internal, external, and a wireless print server. Even though all three print servers may be installed, only one is connected to the network and is the active print server. Table 6 outlines priorities and identifies which device becomes the active print server when multiple print servers are installed.

Table 6 • Active Print Server

If the Primary Network is set to:	Installed and Connected to a Live Ethernet Network			Then the Active Print Server will be:
	Internal	External	Wireless*	
Wired	X	X	X	Internal
		X	X	External
			X	Wireless
Wireless	X	X	X	Wireless
	X	X		Internal
		X		External

* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

You can select whether the wired or wireless print server will be the primary connection using one of the following:

- the PRIMARY NETWORK parameter on the control panel (see Table 11, *Wireless Parameters for V53.15.x and R53.16.x Firmware (ZM400, ZM600, RZ400, and RZ600 Printers)* on page 50)
- the ^NC ZPL command (see *^NC* on page 96)
- the Primary/Secondary settings web page (see *Primary/Secondary Settings* on page 73)

Notes •

2

Configuration

Use the instructions in this section to configure your ZebraNet wireless print server for operation.

Contents

Overview 30
Configure Using the Network Setup Wizard. 31
Install a Wireless Radio Card or Compact Flash Wireless Radio Card 38

Overview

Important • A wireless option board must be installed on your printer before you can configure the printer to communicate using a wireless radio card. If this board is not installed and active, the wireless portion of the network configuration label will not print (see *Print Network Configuration Information* on page 46). See Table 1 on page 17 for the required firmware and other restrictions.

You may configure your printer for wireless operation in the following ways:

- **Through the Wireless Setup Wizard**, which writes a ZPL script for you (see *Configure Using the Network Setup Wizard* on page 31). On the last screen of the utility, you may choose to send the command directly to your printer, or you may choose to save the ZPL script to a file. The saved ZPL file has several purposes:
  - The file can be sent to the printer through any available connection (serial, parallel, USB, or wired print server).
  - The file can be resent to the printer after the network settings have been restored to factory defaults.
  - The file can be sent to multiple printers that will use the same network settings.
- **Through ZPL script** that you write yourself (see *ZPL Commands for Wireless Operation* on page 93). Use the `^WK` command to set the basic parameters for security type. You can send the command through any available connection (serial, parallel, USB, or wired print server).
- **Through Set/Get/Do (SGD) commands** (see *SGD Wireless Commands* on page 125). Begin with `wlan.security` to set the wireless security type. Depending on which security type that you select, other SGD commands will be necessary to specify other parameters. You can send the commands through any available connection (serial, parallel, USB, or wired print server).

Configure Using the Network Setup Wizard

The ZebraNet Bridge Enterprise utility resides on the User CD for your printer and is available through http://www.zebra.com/software. ZebraNet Bridge Enterprise version 1.2.5 or later is required to configure the printer correctly for use.

The Network Setup Wizard, which is part of this software, allows you to configure your printer easily for wireless operation by writing the appropriate ZPL script for you. Use this utility when you are first installing the wireless print server or after you set the network options back to factory defaults.

Note • You can only set up one print server at a time with the Network Setup Wizard. To configure multiple print servers (wired and wireless), run the program once for each print server.

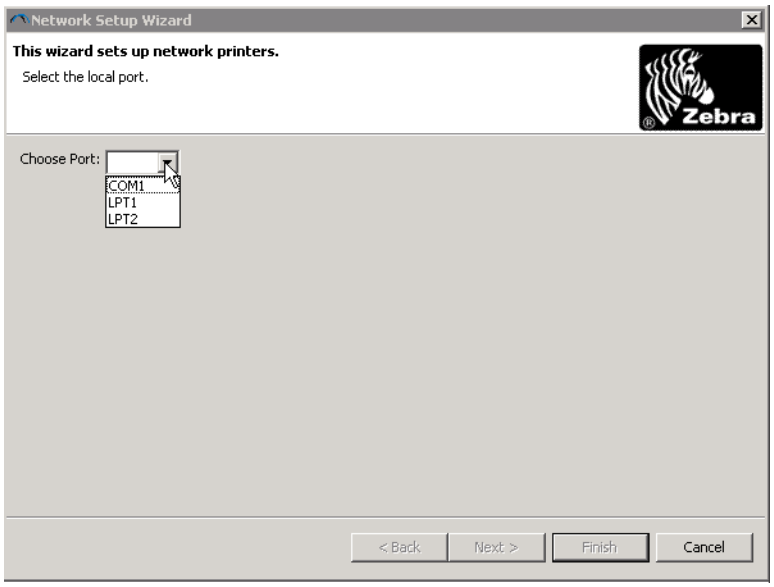
To use the Network Setup Wizard, complete these steps:

1. If it is not already installed, install ZebraNet Bridge Enterprise on your computer. You can get the program from the user CD that came with your printer, or you can download it at http://www.zebra.com/software.

2. Launch the ZebraNet Bridge Enterprise program. If you are prompted for a serial number, you may click Cancel. You will still be able to use the Network Setup Wizard.

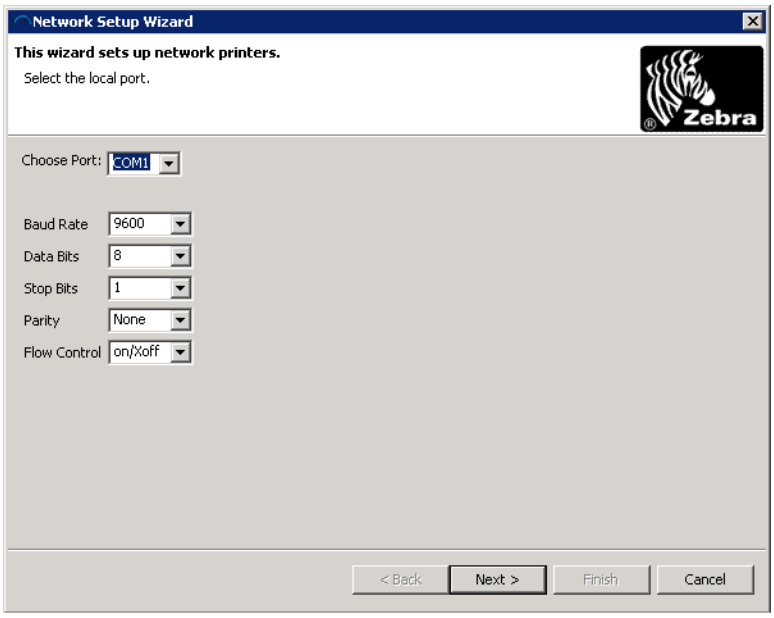
3. From the Menu bar, select Tools > Network Setup Wizard.

   The Network Setup Wizard opens.



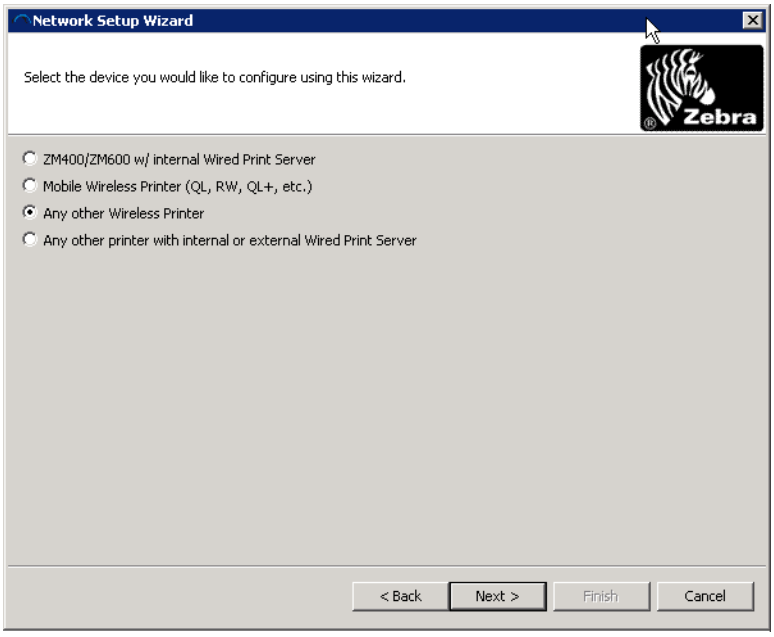
4. From the Choose Port list, select the port to which your printer is connected. If you will save the file without sending it to the printer, you may select any available port. If a port is in use by another device, it will not be included in the drop-down list.

5. If you selected a serial port, the serial configuration information appears below the Choose Port list. If necessary, change the serial communication settings to match your printer's settings.



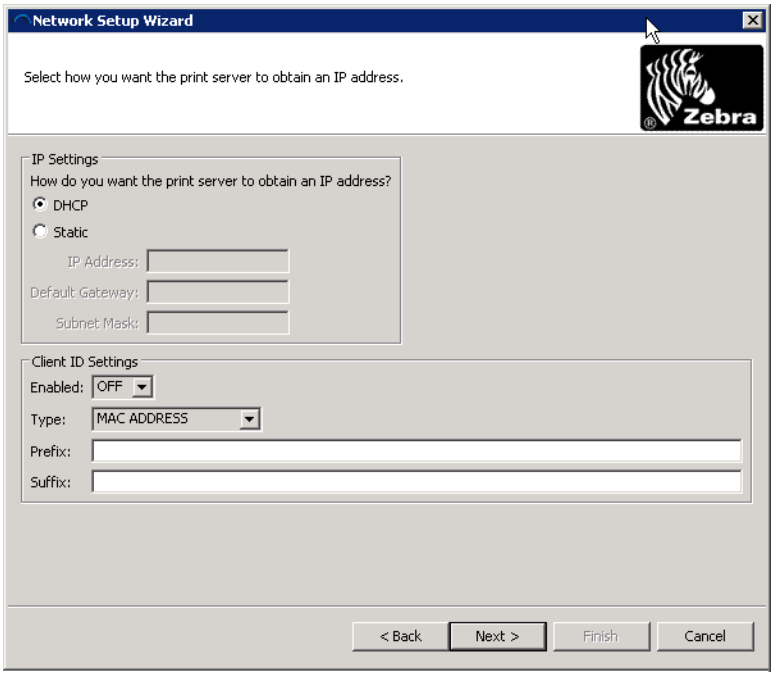
6. Click Next.

   The wizard prompts for the print server device to configure. To configure a wireless print server for most printers supported by this manual, select Any Other Wireless Printer.


Network Setup Wizard
Select the device you would like to configure using this wizard.
Zebra
ZM400/ZM600 w/ internal Wired Print Server
Mobile Wireless Printer (QL, RW, QL+, etc.)
Any other Wireless Printer
Any other printer with internal or external Wired Print Server
< Back
Next >
Finish
Cancel

7. Click Next.

   The wizard prompts for the wireless IP information.

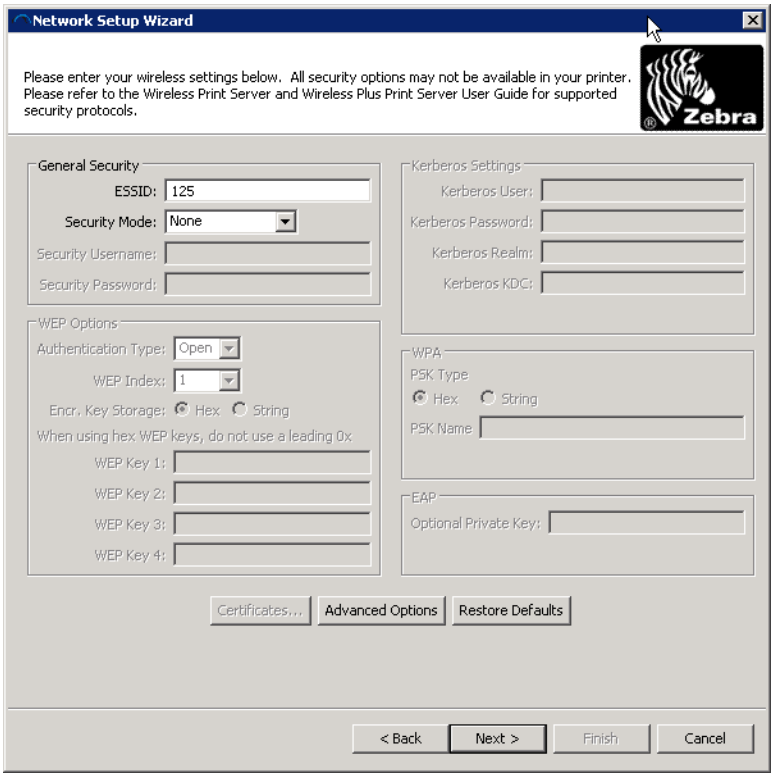


8. Enable the DHCP (dynamic) or static IP option.

If you will be using...	Complete the following steps...
DHCP	Select DHCP.
Static	**a.** Select Static. The IP settings fields are activated. **b.** Enter the IP Address, Default Gateway, and Subnet Mask for the wireless print server.

9. From the Network IP Selection window, click Next.

The Wireless Settings window opens.



10. Enter the appropriate wireless settings.

Note • To use a pass phrase for WPA PSK authentication:

a. Set the ESSID and pass phrase at your access point.

b. Make sure that you entered the correct ESSID on the Wireless Settings window earlier in this procedure.

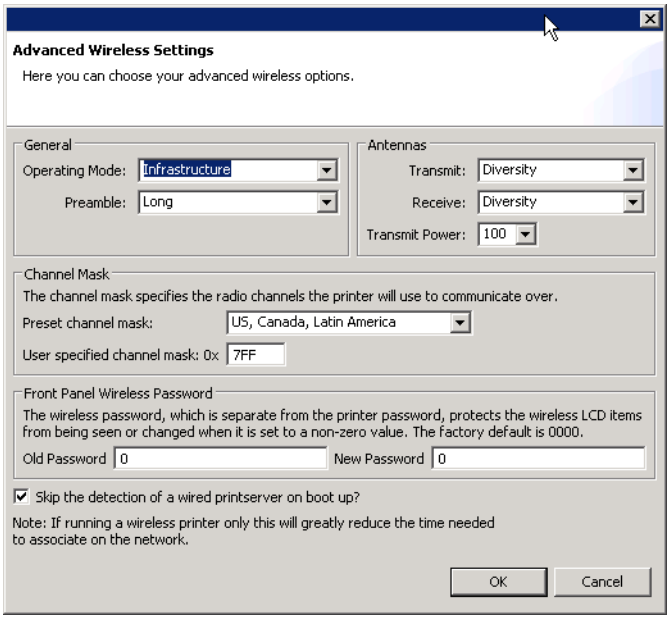
c. In the Advanced Wireless Settings window, set PSK Type to String.

d. Enter the pass phrase in the PSK Name field.

The pass phrase will be converted to a hex value for you in the resulting ZPL code.

11. Click Advanced Options in the Wireless Settings window.

The Advanced Wireless Settings window opens.


Advanced Wireless Settings
Here you can choose your advanced wireless options.
General
Operating Mode: Infrastructure
Preamble: Long
Antennas
Transmit: Diversity
Receive: Diversity
Transmit Power: 100
Channel Mask
The channel mask specifies the radio channels the printer will use to communicate over.
Preset channel mask: US, Canada, Latin America
User specified channel mask: 0x 7FF
Front Panel Wireless Password
The wireless password, which is separate from the printer password, protects the wireless LCD items from being seen or changed when it is set to a non-zero value. The factory default is 0000.
Old Password 0
New Password 0
Skip the detection of a wired printserver on boot up?
Note: If running a wireless printer only this will greatly reduce the time needed to associate on the network.
OK
Cancel

12. Enter the appropriate settings (if any).

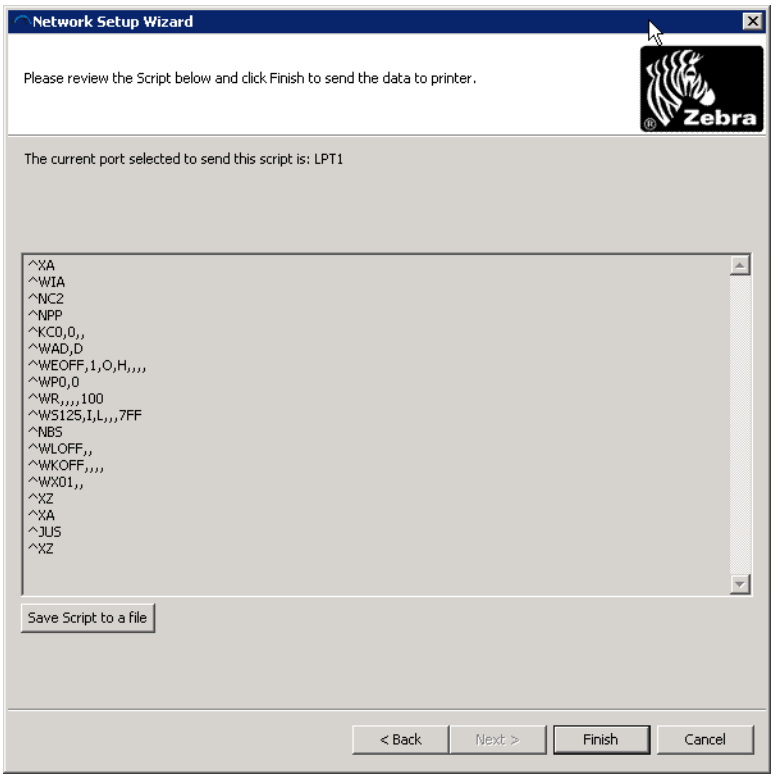
13. Click OK.

The Wireless Settings window returns.

14. Click Next.

Based on your selections in the Wireless Setup Wizard, the program writes the appropriate ZPL commands and displays them for your review. An example of the code is shown in Figure 4.

Figure 4 • ZPL Code Generated by the Wireless Setup Wizard



15. Continue with the desired action:

To...	Then...
Complete setup by sending the ZPL script to the printer through the port selected at the beginning of this procedure	**a.** Verify that the printer is connected to the computer through the port you selected. **Note** • For serial connections, use a serial null modem cable. **b.** If you have not already done so, turn on (**I**) the printer. **c.** On the Review and Send ZPL for Wireless window, click Finish. The printer sends the ZPL script to the printer through the selected port. The Wireless Setup Wizard screen closes. **d.** Turn the printer off (**O**) and then back on (**I**).

To...	Then...
Save the ZPL script to a file for later use or for use on other printers	**Note** • You can send the ZPL script file to multiple printers that use the same configuration, or you can send the file to a printer that had the network settings restored to the factory defaults. This saves you from having to go through the Wireless Setup Wizard more than once. **a.** On the Review and Apply Changes Window, click Save Script to a file. The computer prompts you for a name and destination for the file. The default location is the ZebraNet Bridge program folder. The default file name is ZBR_WLAN.ZPL. **b.** If desired, enter a new file name, and select a new location. **c.** Click Save. **d.** If you have not already done so, turn on (**I**) the printer. **e.** Send the ZPL file to the printer through the connection of your choice.

Install a Wireless Radio Card or Compact Flash Wireless Radio Card

Note • The ZebraNet Internal Wireless Print Server has a built-in wireless radio card. This section applies only to the ZebraNet Wireless Print Server and the ZebraNet Wireless Plus Print Server.

Printers that have the wireless option board installed can use any of the wireless radio cards or Compact Flash wireless radio cards listed in *Supported Wireless Radio Cards* on page 20. This section provides instructions for installing either type of card. Most printers use a clear plastic RF cover over the wireless radio card or compact Flash wireless radio card.

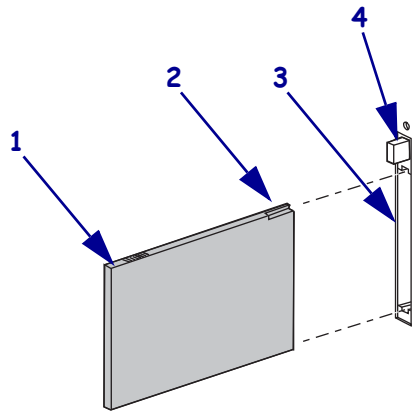
Wireless Radio Card

This section applies to PCMCIA or CardBus wireless radio cards.

Note • Z4Mplus, R4Mplus, and Z6Mplus printers do not support CardBus wireless radio cards.

To install a wireless radio card, complete these steps:

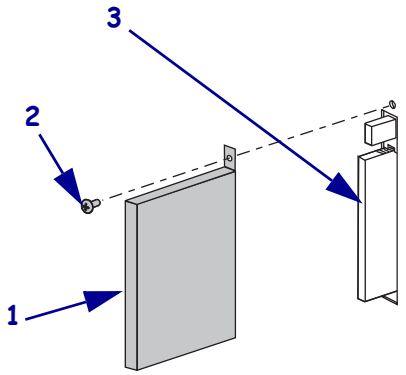
1. Turn off (**O**) the printer.
2. Remove and discard the metal cover that was shipped in place over the wireless option card slot on the back of the printer.
3. Position the notch on the wireless radio card on the top, leading edge. Insert the wireless radio card into the wireless option card slot on the back of the printer until the card-eject button pops out.



1	Wireless radio card
2	Notch
3	Wireless option card slot on back of printer
4	Card-eject button

4. Place the RF card cover over the wireless radio card, and secure it with a small screw.

Note • The S4M, ZM400, ZM600, RZ400, and RZ600 do not use the RF card cover.



1	Clear plastic RF card cover (not used on all printers)
2	Screw
3	Wireless radio card

5. Turn on (**I**) the printer.

   The printer restarts and uses the wireless radio card to communicate with your WLAN. Allow several minutes for the printer to connect to the network. For more information about wireless status, refer to *View Wireless Status through the Control Panel* on page 44 or *Troubleshooting* on page 57.

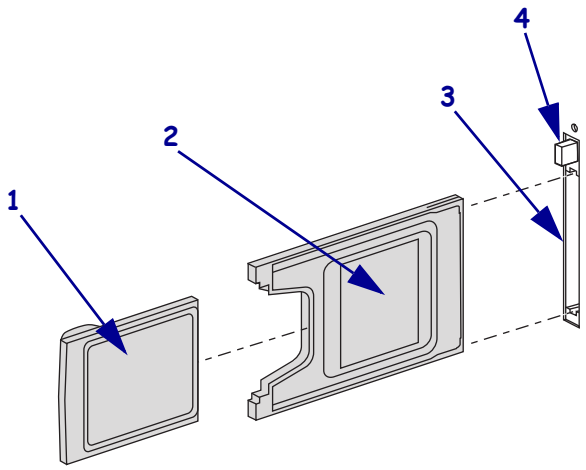
Compact Flash Wireless Radio Card

This section applies to Compact Flash wireless radio cards, which require an adapter before they can be used in the wireless option card slot.

To install a Compact Flash wireless radio card and adapter, complete these steps:

1. If you have not already done so, turn off (**O**) the printer.
2. Remove and discard the metal cover that was shipped in place over the wireless option slot on the back of the printer.
3. See Figure 5. Position the adapter with the back facing as shown. Insert the adapter into the wireless option card slot on the back of the printer until the card-eject button pops out.
4. See Figure 5. Insert the Compact Flash wireless radio card into the adapter.

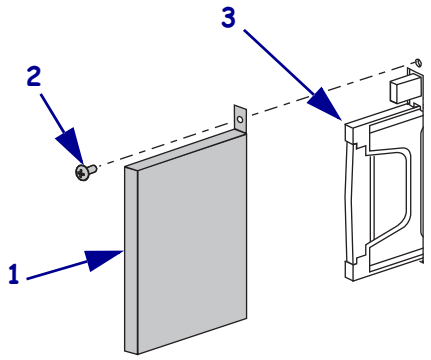
Figure 5 • Installing a Compact Flash Wireless Radio Card



1	Back of Compact Flash wireless radio card
2	Back of adapter
3	Wireless option card slot on back of printer
4	Card-eject button

5. Place the RF card cover over the wireless radio card, and secure it with a small screw.

Note • The S4M, ZM400, ZM600, RZ400, and RZ600 do not use the RF card cover.



1	Clear plastic RF card cover (not used on all printers)
2	Screw
3	Compact Flash wireless radio card and adapter

6. Turn on (**I**) the printer.

   The printer restarts and uses the wireless radio card to communicate with your WLAN. Allow several minutes for the printer to connect to the network. For more information about wireless status, refer to *View Wireless Status through the Control Panel* on page 44 or *Troubleshooting* on page 57.

Notes • _____

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_____

_____

_____

3 Wireless Status and Settings

This section presents several options for viewing or modifying the wireless status, signal strength, or settings. You may also use:

- the printer web pages (see *WebView Web Pages* on page 63)
- the ZPL commands (see *ZPL Commands for Wireless Operation* on page 93)
- the Set/Get/Do commands (see *SGD Wireless Commands* on page 125)

Contents

View Wireless Status through the Control Panel 44
LCD Link Status and Wireless Signal Indicators 44
HC100 Wireless Status Indicator Lights 45
Print Network Configuration Information 46
Network Configuration Label 46
HC100 Printer Configuration Wristband 47
View or Change Wireless Parameters on the LCD 48
Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware 48
Parameters for V53.15.x, R53.16.x, or later Firmware (ZM400, ZM600, RZ400, and RZ600 Printers) 50
Parameters for V50.15.x or V53.15.x Firmware (S4M Printer) 53
Restore Network Parameters to Defaults 55

View Wireless Status through the Control Panel

After the wireless print server is configured, you may view the wireless status on the printer's control panel. Printers with an LCD display text or symbols (see *LCD Link Status and Wireless Signal Indicators*). The HC100 does not have an LCD, so the wireless status is indicated by the control panel lights (see *HC100 Wireless Status Indicator Lights* on page 45).

Note • Refer to the user guide for your printer for specific instructions on how to use the control panel.

LCD Link Status and Wireless Signal Indicators

This section applies to printers and print engines other than the HC100.

Link Status Indicator The wireless link status indicator appears at the bottom left of the LCD, providing a real-time display of the printer's network status (Table 7).

Table 7 • Link Status Indicators

Status Indicator	Meaning
cycling through characters . o 0	The wireless radio card is associated with the WLAN.
underscore _	• The wireless radio card is not associated with the WLAN. Verify that your printer's wireless settings match those of the WLAN. • The firmware on the wireless radio card may need to be updated. See *Supported Wireless Radio Cards* on page 20 for the required firmware versions.
blank	• The printer is checking for a wired print server. • The printer is running a wired print server. • The wireless print server board is not installed or not installed correctly.

Wireless Signal Indicators Depending on which printer/print engine you are using, press the following key to access and scroll through the wireless signal indicators on the LCD:

- The right oval for the *PAX*4, RPAX4, RXi, RXi HF, and the *Xi*IIIPlus
- Plus (+) for 105*SL*
- Plus (+) for the R4Mplus, RZ400, RZ600, ZM400, ZM600, Z4Mplus, and Z6Mplus (supported configurations only)
- The up arrow for the S4M

Table 8 shows the control panel indicators and messages that are associated with the wireless signal.

Table 8 • Wireless Signal Indicators

Wireless Signal Indicator	Description
SIGNAL STRENGTH and SIGNAL QUALITY	When these indicators display percentages, the wireless radio card is communicating with the network. The higher the number is, the better the connection is between the printer and the network. If your printer indicates a signal strength but you cannot communicate with the printer from your computer, move the printer to a different location to try to get a better signal strength or signal quality. This situation could also indicate that the printer is associated with, but not authenticated with, your access point.
NOISE LEVEL	This number indicates any electrical interference with the wireless signal. If your printer cannot communicate with the network and the noise level is high, move the printer to a location that is free of interference.

HC100 Wireless Status Indicator Lights

Table 9 shows the wireless status indicator lights for the HC100 printer.

Table 9 • Wireless Status Indicator Lights

Wireless Status Indicator	Meaning
Steady Green	The printer is associated with a wireless network. The signal strength is strong.
Flashing Green	The printer is NOT associated with a wireless network. The signal strength is strong.
Steady Orange	The printer is associated with a wireless network. The signal strength is weak.
Flashing Orange	The printer is NOT associated with a wireless network. The signal strength is weak.

Print Network Configuration Information

Most printers and print engines print the print server settings on a network configuration label. The HC100 prints the print server settings on the printer configuration wristband.

Network Configuration Label

A network configuration label lists the settings for the print servers installed in your printer. If a particular type of print server is not installed, the IP information for that print server appears as all zeroes (000.000.000.000). The active print server is indicated by an asterisk (see *Determining the Active Print Server* on page 25 for more information).

To print a network configuration label, complete these steps:

1. From the control panel, enter Setup mode.

   Note • Refer to the user guide for your printer for specific instructions on how to use the control panel.

2. Scroll to **LIST NETWORK** (level 3 parameter **PRINT OUT NETWORK** on the S4M).

3. Confirm printing.

   A network configuration label prints (Figure 6).

Figure 6 • Network Configuration Label

Wireless Print Server

```
Network Configuration

Zebra Technologies
ZTC 140XiIIIPlus-200dpi
ZBR3258042

NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.030.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.02.19............. CARD FIRMWARE
00082131b6ba........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11 Mb/s
11 Mb/s............. CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Wireless Plus Print Server and Internal Wireless Plus Print Server

ZM and RZ Printers

```
Network Configuration

Zebra Technologies
ZTC ZM400-200dpi ZPL
ZBR2834792

0.0.0 *............. OPTION FIRMWARE
Wired............... PRIMARY NETWORK
NO.................. LOAD FROM EXT?
Internal Wired..... ACTIVE PRINTSRVR

External Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT

Internal Wired*
ALL................. IP PROTOCOL
010.003.004.116.... IP ADDRESS
255.255.255.000.... SUBNET MASK
010.003.004.001.... DEFAULT GATEWAY
010.003.001.098.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
00074d2b4168....... MAC ADDRESS

Wireless
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
NO.................. CARD INSERTED
0000H............... CARD MFG ID
0000H............... CARD PRODUCT ID
000000000000....... MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11 Mb/s
11 Mb/s............. CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
OPEN................ WEP TYPE
NONE................ WLAN SECURITY
1................... WEP INDEX
020................. POOR SIGNAL
LONG................ PREAMBLE
NO.................. ASSOCIATED
ON.................. PULSE ENABLED
15 ................. PULSE RATE
OFF................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

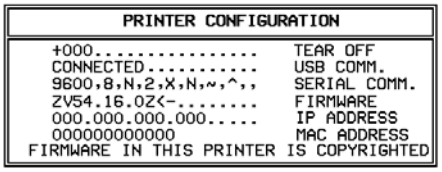
Other Printers/Print Engines

```
Network Configuration

Zebra Technologies
ZTC 105SL-200dpi
ZBR12908662

1.10.1729 ........ OPTION FIRMWARE
NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.034.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.60.21............. CARD FIRMWARE
000e84c4f876........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11 Mb/s
11 Mb/s............. CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

HC100 Printer Configuration Wristband

An HC100 printer configuration wristband (Figure 7) shows the printer's connectivity settings. The IP ADDRESS and MAC ADDRESS fields will have values only if a wired or wireless print server is active.

Figure 7 • Sample Printer Configuration Wristband



To print a printer configuration wristband, complete these steps:

1. Make sure that the printer is on (**I**) and ready to print.
2. Press and hold PAUSE/FEED until the green lights turn off on the printer status indicator and the orange lights blink once.
3. Release PAUSE/FEED.

   A printer configuration wristband prints.

View or Change Wireless Parameters on the LCD

Note • The HC100 does not have an LCD. To view or change the wireless parameters, use the printer's web pages, ZPL commands, or SGD commands.

Refer to the user guide for your printer for specific instructions on how to modify the control panel parameters.

The control panel parameters are somewhat different for different printers.

- For the 105*SL*, *PAX*4, R110*PAX*4, R4Mplus, R110*Xi*, R170*Xi*, R110*Xi* HF, *Xi*III*Plus*, Z4Mplus, and Z6Mplus, see *Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware* on page 48.
- For the ZM400, ZM600, RZ400, and RZ600, see *Parameters for V53.15.x, R53.16.x, or later Firmware (ZM400, ZM600, RZ400, and RZ600 Printers)* on page 50.
- For the S4M printer, see *Parameters for V50.15.x or V53.15.x Firmware (S4M Printer)* on page 53.

Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware

Firmware Requirements Table 10 shows the wireless parameters that may be viewed or modified through the printer's control panel. These parameters appear on printers with firmware V60.15.x, R6x.16.x, or later, and the following special firmware releases: ZSP994P, ZSP999F, ZSP1027F, ZSP1056E, ZSP1082F, or later.

Printers with older versions of firmware have a different set of parameters. For those parameters, refer to the *ZebraNet Wireless Print Server User Guide*. You may download firmware V60.15.x, R6x.15.x, or later to access the newer encryption features. Go to http://www.zebra.com/firmware for firmware download options.

Wireless Password Some of the parameters can be password-protected by a wireless password. By default, the wireless print servers run in an "unprotected" mode (password set to **0000**), which means that you do not need to enter a wireless password through the control panel to view or modify wireless settings. To set a wireless password (not the same as the general printer password), use the ^WP ZPL command.

Table 10 • Wireless Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware

Parameter	Function
WIRED PS CHECK?[1]	**View if the Printer Checks for a Wired Print Server at Bootup** This parameter, which serves the same function as the ^NB ZPL command, tells if the printer searches for a wired print server at bootup. *Selections:* YES, NO *Default Value:* NO

Table 10 • Wireless Parameters for V60.15.x, R6x.15.x, ZSPx, or later Firmware (Continued)

Parameter	Function
LOAD LAN FROM?[1]	**View if IP Settings Are Loaded from the Printer or Print Server** This parameter, which serves the same function as the ^NP ZPL command, tells if the printer uses IP settings from the printer or the print server at bootup. *Selections:* PRINTER, PRINTSERVER *Default Value:* PRINTER
IP PROTOCOL[2]	**View or Change the Method to Obtain an IP Address** This parameter tells if the user (permanent) or the server (dynamic) selects the IP address. If a dynamic option is chosen, this parameter tells the method(s) by which the print server (wired or wireless) receives the IP address from the server. *Selections:* ALL, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT *Default Value:* All
IP ADDRESS[2]	**View the Printer's IP Address** *Default Value:* 0.0.0.0
SUBNET MASK[2]	**View the Subnet** *Default Value:* 255.255.255.0
DEFAULT GATEWAY[2]	**View the Gateway** *Default Value:* 0.0.0.0
MAC ADDRESS [2,3]	**View the Wireless Radio Card's MAC Address** Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card. *Default Value:* 000000000000
ESSID [1,2,3]	**View the ESSID Value** The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration. *Default Value:* 125
WLAN SECURITY[1,3]	**View the WLAN Security Type** This parameter displays the current security type. To change the value shown, use *^WX* on page 115 or *wlan.security* on page 192.
RESET NETWORK[1,3]	**Reset the Wired or Wireless Network** Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network. (Same function as ZPL command *~WR* on page 112.)

1 Appears only when the ZebraNet Wireless Print Server is installed.

2 Appears after the printer recognizes the existence of a ZebraNet print server (wired or wireless). All zeroes (000.000.000.000) display until the printer obtains an IP address or defaults to address 192.168.254.254.

3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

Parameters for V53.15.x, R53.16.x, or later Firmware (ZM400, ZM600, RZ400, and RZ600 Printers)

Firmware Requirements Table 11 shows the wireless parameters that may be viewed or modified through the printer's control panel.

Wireless Password Some of the parameters can be password-protected by a wireless password. By default, the wireless print servers run in an "unprotected" mode (password set to **0000**), which means that you do not need to enter a wireless password through the control panel to view or modify wireless settings. To set a wireless password (not the same as the general printer password), use the ^WP ZPL command.

Table 11 • Wireless Parameters for V53.15.x and R53.16.x Firmware (ZM400, ZM600, RZ400, and RZ600 Printers)

Parameter	Function
PRIMARY NETWORK[1]	**Select the Primary Network Device** This parameter tells if the printer uses IP settings from the wireless or a wired print server at bootup. *Selections:* WIRED, WIRELESS *Default Value:* WIRED
LOAD FROM EXT?[1]	**View if IP Settings Are Loaded from the Printer or Print Server** This parameter tells if the printer should use IP settings from the external print server at bootup. *Selections:* YES, NO *Default Value:* NO
ACTIVE PRINTSRVR[1]	**View the Active Print Server** This menu item displays which print server is being used. This tells which device's settings such as IP protocol and IP address are being displayed under those menu items. *Selections:* • WIRELESS indicates that the wireless device is active. • INTERNAL WIRED indicates that the internal 10/100 option board is active. • EXTERNAL WIRED indicates that the external print server is active. • NONE indicates that at least one of the network options is installed but none of them are active. When NONE is shown for this menu item, the device-specific items such as IP protocol and IP address will not display. *Default Value:* NONE
IP PROTOCOL[2]	**View or Change the Method to Obtain an IP Address** This parameter tells if the user (permanent) or the server (dynamic) selects the IP address. If a dynamic option is chosen, this parameter tells the method(s) by which the print server (wired or wireless) receives the IP address from the server. *Selections:* ALL, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT *Default Value:* All

Table 11 • Wireless Parameters for V53.15.x and R53.16.x Firmware (ZM400, ZM600, RZ400, and RZ600 Printers) (Continued)

Parameter	Function
IP ADDRESS[2]	**View or Change the Printer's IP Address** This parameter can be modified only when **PERMANENT** is selected for **OBTAIN IP ADDRESS**. *Selections:* 0 to 255 for each field *Default Value:* 0.0.0.0 **Note** • Leading zeroes are not shown in the address.
SUBNET MASK[2]	**View or Change the Subnet** This parameter can be modified only when **PERMANENT** is selected for **OBTAIN IP ADDRESS**. *Selections:* 0 to 255 for each field *Default Value:* 255.255.255.0 **Note** • Leading zeroes are not shown in the address.
DEFAULT GATEWAY[2]	**View or Change the Gateway** This parameter can be modified only when **PERMANENT** is selected for **OBTAIN IP ADDRESS**. *Selections:* 0 to 255 for each field *Default Value:* 0.0.0.0 **Note** • Leading zeroes are not shown in the address.
MAC ADDRESS [2,3]	**View the Wireless Radio Card's MAC Address** Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card. *Default Value:* 000000000000
ESSID [1,2,3]	**View the ESSID Value** The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration. *Default Value:* 125
WLAN SECURITY[1,3]	**View the WLAN Security Type** This parameter displays the current security type. To change the value shown, use *^WX* on page 115 or *wlan.security* on page 192.

Table 11 • Wireless Parameters for V53.15.x and R53.16.x Firmware (ZM400, ZM600, RZ400, and RZ600 Printers) (Continued)

Parameter	Function
RESET NETWORK[1,3]	**Reset the Wired or Wireless Network** Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network. (Same function as ZPL command ~*WR* on page 112.)

1 Appears after the printer recognizes the existence of a ZebraNet print server (wired or wireless). All zeroes (000.000.000.000) display until the printer obtains an IP address or defaults to address 192.168.254.254.

2 Appears only when the ZebraNet Wireless Print Server is installed.

3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

Parameters for V50.15.x or V53.15.x Firmware (S4M Printer)

Table 12 shows the wireless parameters that may be viewed or modified through the S4M control panel. To view wireless and network parameters that are not available as selections through the control panel, print a network configuration label.

Note • Refer to the *S4M User Guide* for specific instructions on how to use the control panel.

Table 12 • Wireless Parameters for V50.15.x or V53.15.x Firmware (S4M Printer)

Parameter	Explanation
Password Level 3 Parameters	
OBTAIN IP ADDRESS[1]	**Obtain an IP Address** Selects the method by which an IP address will be assigned to the printer. If you choose AUTO SELECT, you may specify an IP protocol. *Selections:* AUTO SELECT (dynamic), PERMANENT (user-specified) *Default Value:* AUTO SELECT
CHANGE IP PROTOCOL[1]	**View or Change the IP Protocol** Determines the method(s) by which the print server (wired or wireless) receives the IP address from the server. This parameter can be modified only when AUTO SELECT is selected for OBTAIN IP ADDRESS. *Selections:* ALL, GLEANING ONLY, RARP, BOOTP, DHCP, DHCP AND BOOT *Default Value:* ALL
CHANGE IP ADDRESS[1]	**View or Change the Printer's IP Address** This parameter can be modified only when PERMANENT is selected for OBTAIN IP ADDRESS. *Selections:* 0 to 255 for each field *Default Value:* 0.0.0.0 **Note** • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.
CHANGE SUBNET[1]	**View or Change the Subnet** This parameter can be modified only when PERMANENT is selected for OBTAIN IP ADDRESS. *Selections:* 0 to 255 for each field *Default Value:* 0.0.0.0 **Note** • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.

1 Appears after the printer recognizes the existence of a ZebraNet print server (wired or wireless). All zeroes (000.000.000.000) display until the printer obtains an IP address or defaults to address 192.168.254.254.

2 Appears only when the ZebraNet Wireless Print Server is installed.

3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

Table 12 • Wireless Parameters for V50.15.x or V53.15.x Firmware (S4M Printer) (Continued)

Parameter	Explanation
CHANGE GATEWAY[1]	**View or Change the Gateway** This parameter can be modified only when **PERMANENT** is selected for **OBTAIN IP ADDRESS**. *Selections:* 0 to 255 for each field *Default Value:* 0.0.0.0 **Note •** Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.
Password Level 4 Parameters	
MAC ADDRESS [2,3]	**View the Wireless Radio Card's MAC Address** Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card. *Default Value:* 000000000000
ESSID [2,3]	**View the ESSID Value** The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration. *Default Value:* 125
WLAN SECURITY[1,3]	**View the WLAN Security Type** This parameter displays the current security type. To change the value shown, use *^WX* on page 115 or *wlan.security* on page 192.
RESET NETWORK[1,3]	**Reset the Wired or Wireless Network** Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network. (Same function as ZPL command *~WR* on page 112.)

1 Appears after the printer recognizes the existence of a ZebraNet print server (wired or wireless). All zeroes (000.000.000.000) display until the printer obtains an IP address or defaults to address 192.168.254.254.

2 Appears only when the ZebraNet Wireless Print Server is installed.

3 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

Restore Network Parameters to Defaults

You may need to restore the network parameters to the factory defaults under the following circumstances:

- If you download a different version of firmware to your printer
- If you need to reset the encryption keys (for instances where a key was entered incorrectly or was forgotten)

After you return the network parameters to the defaults, you must reconfigure your printer to use the wireless print server (see *Configuration* on page 29). If you saved the ZPL script generated by the Wireless Setup Wizard, simply send this file to the printer, and then power cycle the printer. If you were using a wireless password, you must set it again (see *^WP* on page 110).

You can set the network parameters back to the factory defaults in two ways:

- The **Restore Default Network Configuration** button on the printer's View and Modify Printer Settings Page (see Figure 9 on page 67).
- The `DEFAULT NET` option, which appears as an option when you exit Setup mode. Refer to the user guide for your printer for specific instructions on how to modify the control panel parameters.

Note • The `LOAD DEFAULTS` option and the **Restore Default Configuration** button reset all printer parameters other than network settings back to factory defaults. The network settings will not change when these options are selected.

Notes •

4

Troubleshooting

This section provides solutions to problems related specifically to the wireless print servers.

For print quality or other printer-specific problems, refer to the troubleshooting section in the user guide for your printer. For problems with the wireless radio card or access point not addressed here, refer to the appropriate third-party documentation.

Contents

Wireless Error Messages 58
General Issues 58
Encryption and Authentication Issues 60
IP Issues 61

Wireless Error Messages

Table 13 shows error messages that may appear on the control panel.

Table 13 • Error Messages

Message	Description
NO CARD INSERTED	The wireless radio card is not inserted at all or is not fully seated.
NOT ASSOCIATED	The wireless radio card is present but cannot log on to the network.
NOT AUTHENTICATD	The wireless radio card is present and associated with the access point, but it has not been authenticated by the authentication server.
RADIO WARNING POOR SIGNAL	The wireless signal strength has dropped below the poor signal threshold value, which is set through the Wireless Setup web page (see *Wireless Setup* on page 76). **Note** • The poor signal setting affects when you see the POOR SIGNAL warning, but it does not affect whether your printer will be able to associate with your network at a low signal strength.

General Issues

Table 14 • General Issues and Recommended Solutions

Issue	Possible Cause	Recommended Solution
The printer acknowledges the wireless radio card and indicates a signal strength, but the printer does not appear to connect to the network.	The combination of signal strength and signal quality at the printer may not be good enough to establish a connection to the network.	Move the printer or the access point to another location, or remove any obstructions between the two. A direct line of site between the printer and access point provides the best results. Refer to the third-party documentation for your access point for additional recommendations and limitations.
	The printer is associated with, but not authenticated with, your access point.	1. Check your encryption settings. 2. Verify that your MAC address is approved for the access point.
The printer does not acknowledge the wireless radio card.	The card may not be inserted correctly.	Make sure that the wireless radio card is correctly seated in the wireless option card slot.
	Your printer may not be equipped with a ZebraNet wireless print server.	Contact your authorized Zebra representative for information about purchasing the ZebraNet Wireless Plus Print Server or Internal Wireless Plus Print Server.
	The card may not be supported for use with the ZebraNet wireless print servers.	Make sure that you are using a compatible wireless radio card (see *Supported Wireless Radio Cards* on page 20).

Table 14 • General Issues and Recommended Solutions (Continued)

Issue	Possible Cause	Recommended Solution
After a firmware upgrade, the printer will not connect to the network.	Network settings need to be updated.	1. Through the printer's control panel, press SETUP/EXIT to enter Setup mode. 2. Press SETUP/EXIT again to access the printer's save and default options. 3. Scroll to DEFAULT NET. 4. Press SETUP/EXIT. The network settings are returned to factory defaults. 5. Reconfigure your printer to use the ZebraNet wireless print server (see *Configuration* on page 29). If you saved the ZPL script generated by the ZebraNet Bridge Wireless Setup Wizard utility, simply send this file to the printer. If you were using a wireless password, you need to set it again (see *^WP* on page 110). 6. Power cycle the printer for the settings to take effect.
My wireless connection is inconsistent. The signal strengths change back and forth between high and low numbers.	An access point may be bad. The card appears to be switching affiliations between access points.	Check the access points on your WLAN, particularly the one closest to the printer.
	The wireless radio card is repeatedly associating with two or more access points because of varying signal strengths.	Check the access points on your WLAN to determine what is causing the signal strengths to vary.

Encryption and Authentication Issues

Table 15 • Encryption and Authentication Issues and Recommended Solutions

Issue	Possible Cause	Recommended Solution
The entry field for WEP keys on the printer's web page does not display all 26 characters.	The field accepts 26 characters, but they may not be able to display all at once because of your browser or system settings.	Use the left and right arrow keys on your keyboard to move the cursor in the WEP key field and reveal characters that may not display.
I set WEP encryption keys using the ^WX ZPL command, and now my wireless print server does not function.	The ZPL script that you sent to the printer may have been incorrect. The printer may be using the wrong encryption key or looking for one that is undefined.	Resend the ^WX command (see *^WX* on page 115). Make sure that all of the required commas are in place in the command. A missing or extra comma in this command can prevent the printer from joining the wireless network.
I set WEP encryption keys using the ^WE ZPL command, and now my wireless print server does not function.	The ZPL script that you sent to the printer may have been incorrect. The printer may be using the wrong encryption key or looking for one that is undefined.	Use the ^WX command (see *^WX* on page 115) instead of ^WE.
	You enabled WEP and WPA encryption modes at the same time.	Before enabling a new security type, disable any mode used previously. Use the ^WX command (see *^WX* on page 115) instead of ^WE to ensure that only one security type is enabled at a time.
I set WEP encryption keys using the wlan.wep.index Set/Get/Do command, and now my wireless print server does not function.	The command that you sent to the printer may have specified the index number for an encryption key that is undefined.	Resend the wlan.wep.index command with the index number for a defined encryption key (see *wlan.wep.index* on page 209).
WPA mode will not work.	The wireless radio card contains an outdated version of firmware.	Flash the latest firmware to the wireless radio card. Contact the card manufacturer for details.
Kerberos mode will not work.	You are using a wireless radio card that does not support Kerberos. Kerberos is available only with Symbol Technologies Spectrum24 wireless radio cards.	Switch to a Symbol Technologies Spectrum24 wireless radio card.
The printer will not connect to the WLAN.	You are using a wireless radio card that does not support the security type being used on your WLAN.	Switch to a wireless radio card that supports your security type. Check Table 2 on page 22 for the security types supported by different wireless radio cards.

IP Issues

Table 16 • IP Issues and Recommended Solutions

Issue	Possible Cause	Recommended Solution
The printer shows IP address 192.168.254.254, which does not appear to work.	IP address 192.168.254.254 is a default address. The printer shows this address after it times out while trying to connect. The printer was likely set to an incorrect static IP address.	Enter a valid static IP address. OR Set IP Protocol to All.
	The DHCP server is not functioning, so a dynamic IP address is not being assigned. The printer timed out and shows the default IP address of 192.168.254.254.	Check the DHCP server.
On my control panel, the IP settings are missing or show all zeroes (000.000.000.000).	Actual IP settings (IP Resolution, IP Address, Subnet Mask, and Default Gateway) will only appear when the printer is associated to and authenticated with the WLAN. Until the time that the printer recognizes the existence of a ZebraNet print server, these parameters will not show through the control panel. After the print server is recognized, all zeroes will display until the printer obtains an IP address or defaults to address 192.168.254.254.	**1.** Allow more time for the printer to complete its connection and obtain an IP address. **2.** If the printer does not connect, check that there is an adequate signal between the printer and the access point. If necessary, move the printer or the access point to another location, or remove any obstructions between the two. A direct line of site between the printer and access point provides the best results. Refer to the third-party documentation for your access point for recommendations and limitations. **3.** Check the IP Protocol setting. If using a static setting, the value entered might not be valid.
The IP address for my wired print server does not bring up the printer home page.	If both a wired and wireless print server are installed on a printer at the same time and the wireless printer is the primary/active print server, the printer web pages can be accessed only through the wireless print server's IP address.	In your browser window, type in the IP address of the wireless print server.

Notes •

5

WebView Web Pages

This section provides details about the ZebraLink WebView web pages for a printer that is running a ZebraNet wireless print server.

Note • The web pages are available only on printers operating in ZPL mode. Printers operating in EPL, APL-I, or APL-D mode do not have web pages.

Contents

Web Page Overview 64
Home Page 64
View Printer Configuration 66
View and Modify Printer Settings 67
Network Configuration Screens 72
Directory Listing 77
Alert Setup 81
Establishing E-Mail Alert Messaging 82
Printer Controls 84
Print Server Settings 86

Web Page Overview

ZebraLink WebView is a browser-based application that provides real-time configuration, control, and monitoring capabilities for your printer. The web pages display real-time information about the printer, including printer status, error conditions, and all printing parameters.

You can use the printer's web pages to view and modify many of the same parameters that appear on the printer's control panel. Through the printer's web pages, you can also enter additional WEP encryption keys and change other parameters that are not accessible through the control panel.

Home Page

The printer's home page is the first web page that opens. This page includes a menu of hyperlinks that allow you to make modifications to the printer, print server, and network settings. Other changeable settings through the home page include:

- Network Status, Error, and Warning reports
- Directories of objects stored in Flash memory and RAM devices
- Objects, stored fonts, images, programs, and ZPL II formats

To access the printer's home page, you need the printer's IP address. When the printer is connected to your WLAN, you can find the IP address using the printer's control panel.

Note • Refer to the user guide for your printer for specific instructions on how to use the control panel.

To access your printer's home page, complete these steps:

1. From the control panel, enter Setup mode.
2. Scroll through the parameters until you reach `IP ADDRESS`.
3. Note the IP Address (do not include any leading zeroes):

   _____

4. Open a web browser window.

5. In the address box, type the IP address for the printer (do not include www or any leading zeroes), and then press Enter.

   The printer's home page displays.

For more information about the options listed on the printer home page, see the following sections:

- *View Printer Configuration* on page 66
- *View and Modify Printer Settings* on page 67
- *Directory Listing* on page 77
- *Alert Setup* on page 81
- *Printer Controls* on page 84
- *Print Server Settings* on page 86

View Printer Configuration

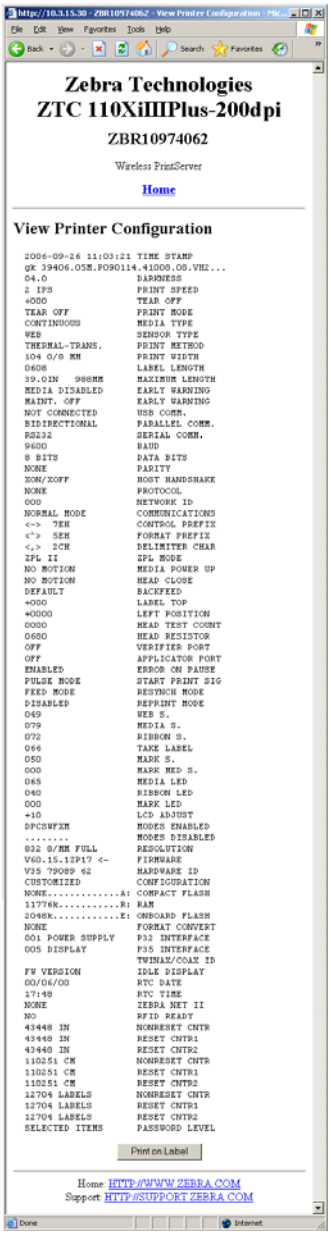
The View Printer Configuration menu option provides accurate, up-to-the-minute information on the printer's current state. An administrator can conveniently find information on the Virtual Configuration Label and also check on the status of printer ports.

To view the printer configuration through WebView, complete these steps:

1. From the printer home page, click **View Printer Configuration**.

   WebView displays the configuration settings (Figure 8).

Figure 8 • View Printer Configuration



2. To receive updated printer information from this view, refresh the browser page.

View and Modify Printer Settings

This section provides you with steps for accessing and modifying printer settings with a ZebraLink-enabled printer. It also provides illustrations of the various pages you can access.

To access the View and Modify Printer Settings, complete these steps:

1. From the printer home page, click **View and Modify Printer Settings**.

   The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

   The following statement appears:

   Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed

4. Click on the statement.

   The View and Modify Printer Settings page displays (Figure 9). Table 17 on page 68 shows the screens that appear when you click on the menu selections on this page and describes some of the crucial items.

Figure 9 • View and Modify Printer Settings Page

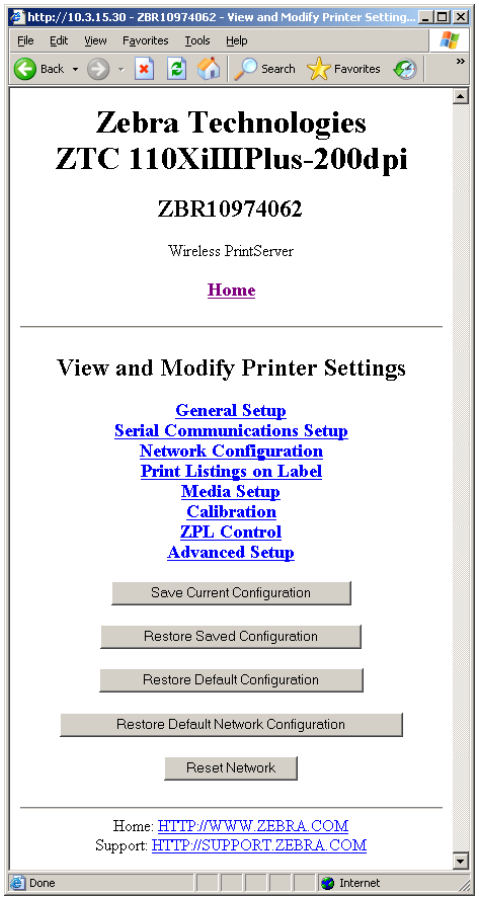
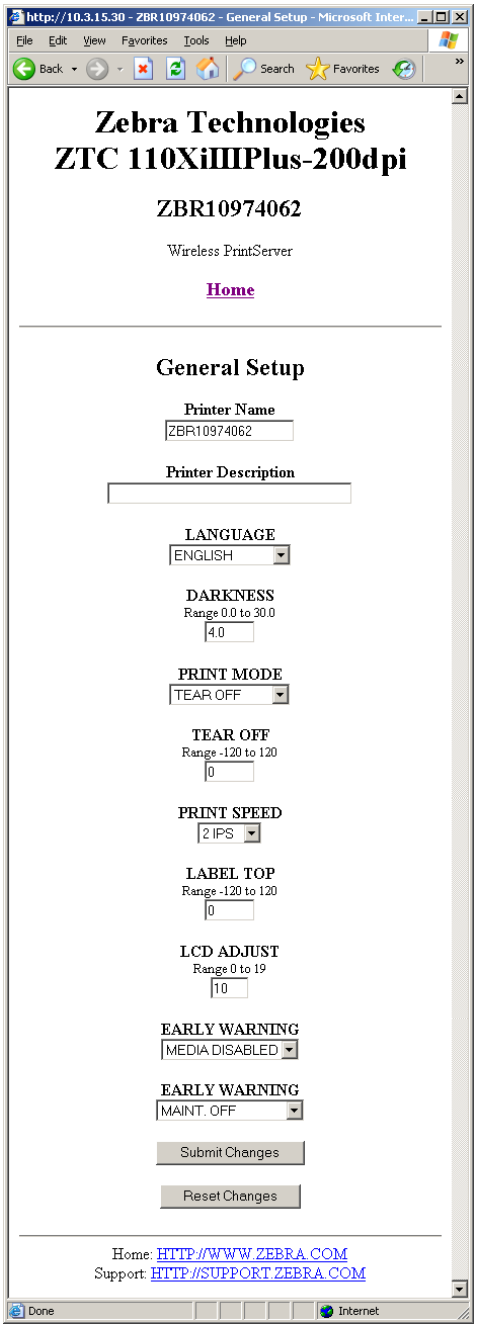


Table 17 • Subscreens: View and Modify Printer Settings Screen

General Setup



Serial Communications Setup

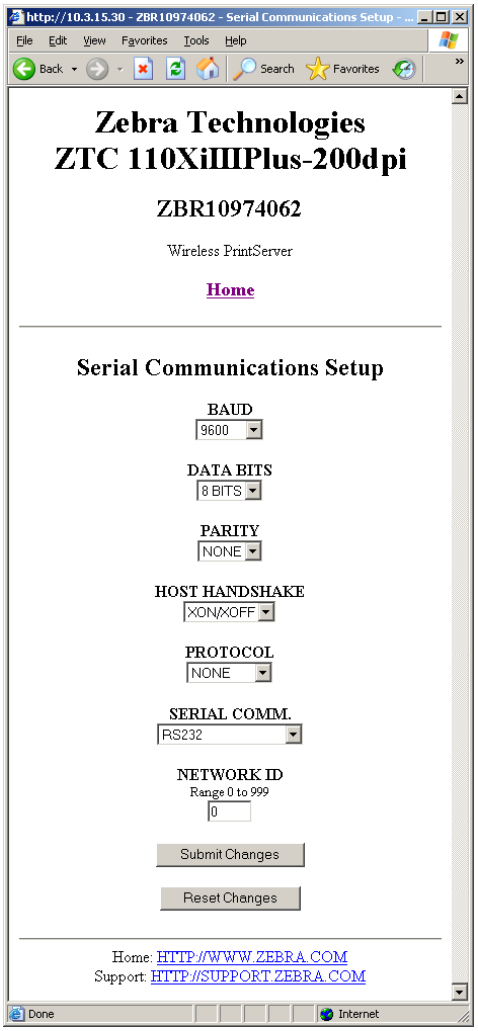
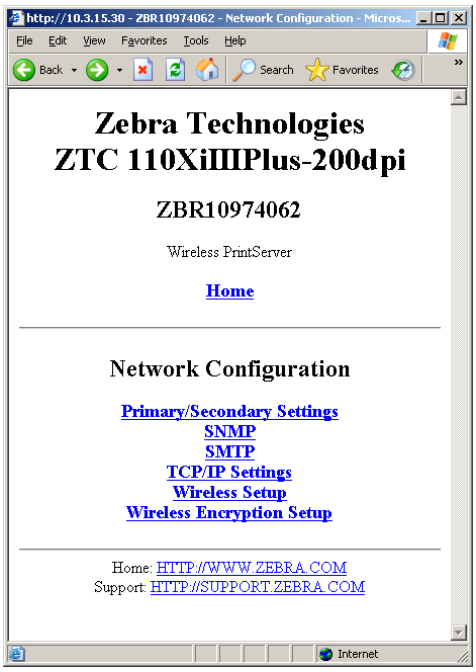


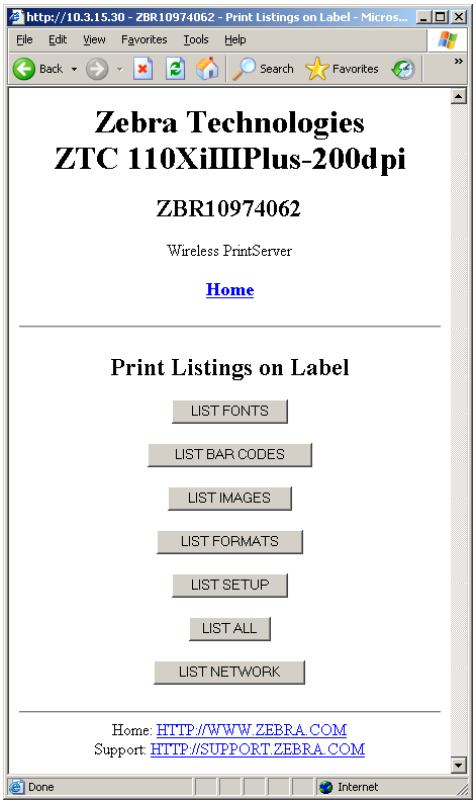
Table 17 • Subscreens: View and Modify Printer Settings Screen (Continued)

Network Configuration Menu

(see Table 18 on page 73 for subscreens)



Print Listings on Label



RFID Setup (RFID Printers/Print Engines only)

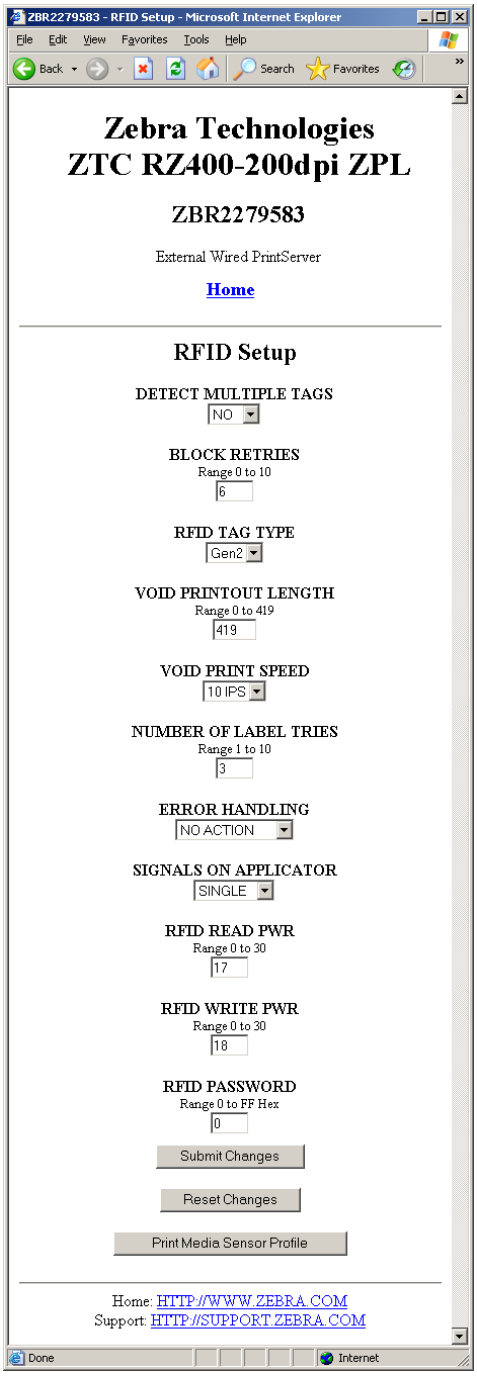
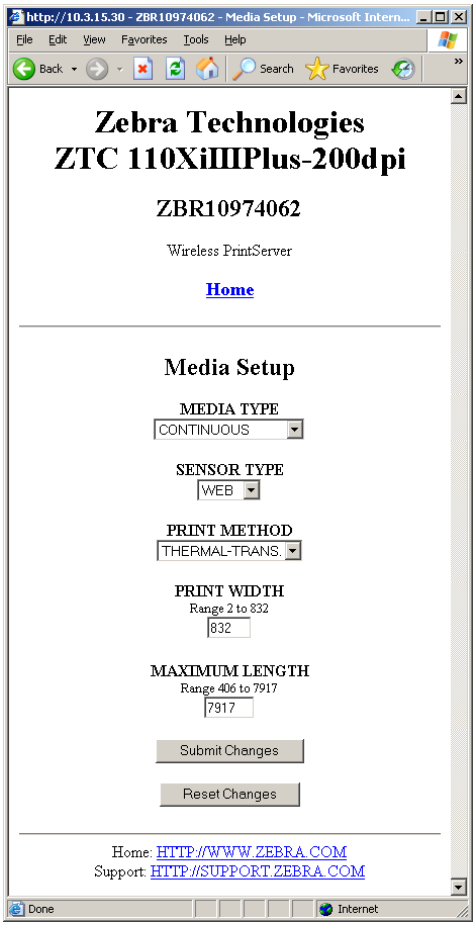


Table 17 • Subscreens: View and Modify Printer Settings Screen (Continued)

Media Setup



Calibration

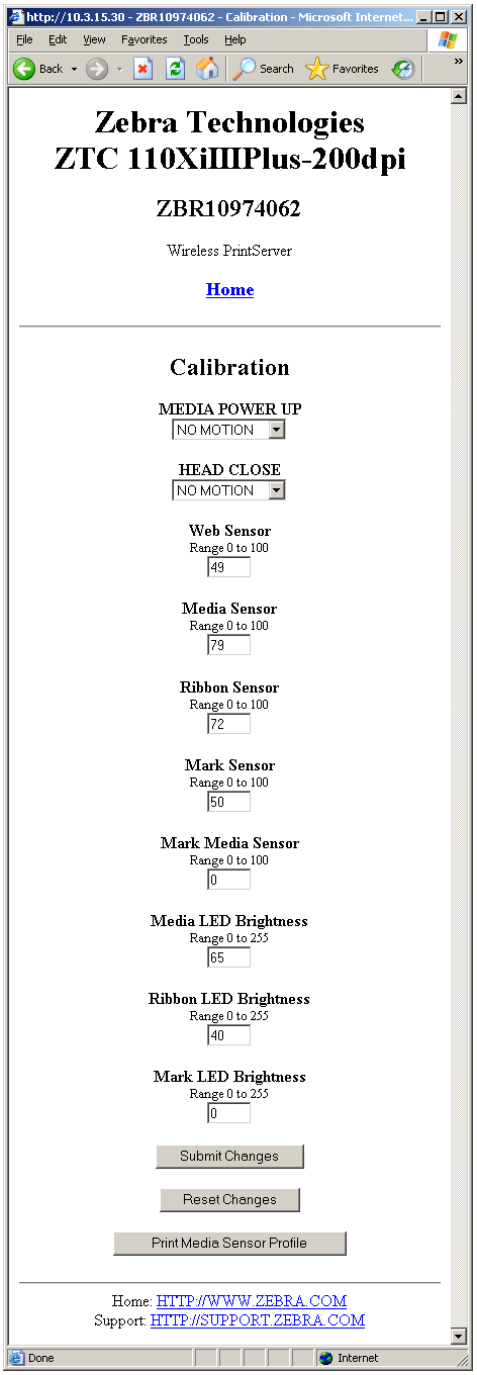
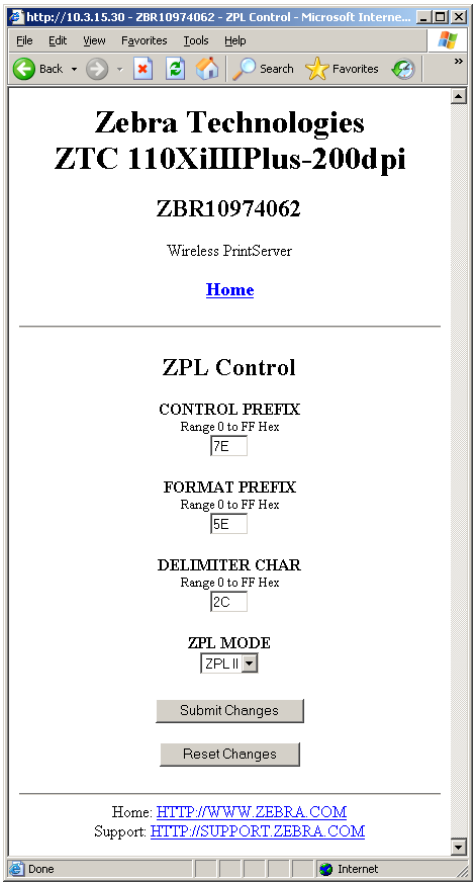
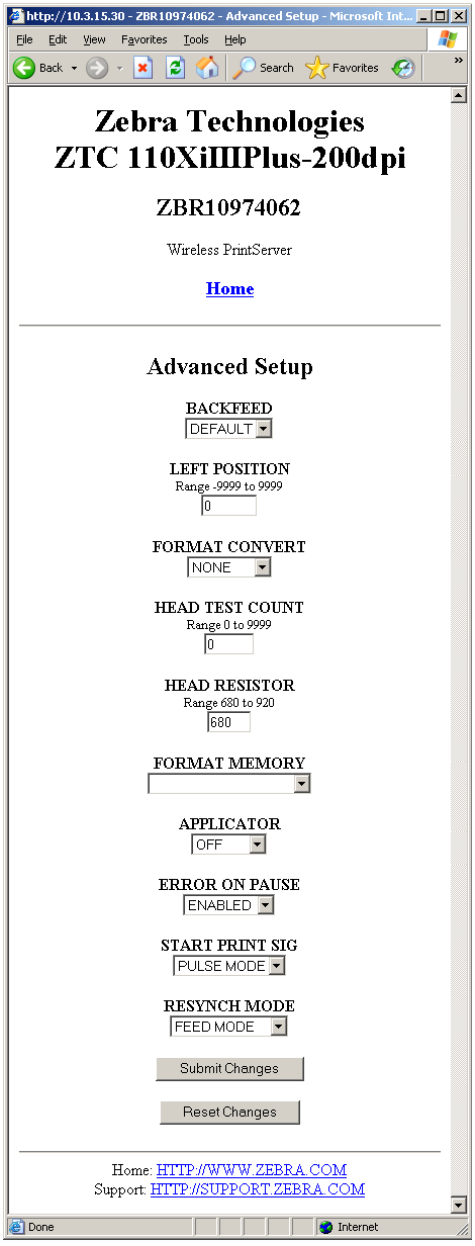


Table 17 • Subscreens: View and Modify Printer Settings Screen (Continued)

ZPL Control



Advanced Setup



Network Configuration Screens

This section shows the shows the screens that appear when you click on the menu items on the Network Configuration menu.

To access the Network Communications menu, complete these steps:

1. From the printer home page, click **View and Modify Printer Settings**.

   The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

   The following statement appears:

   Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed

4. Click on the statement.

   The View and Modify Printer Settings page displays (see Figure 9 on page 67).

5. Click **Network Configuration**.

   The Network Configuration Menu displays. Table 18 shows the screens that appear when you click on the menu selections on this page and describes some of the items that may need clarification.

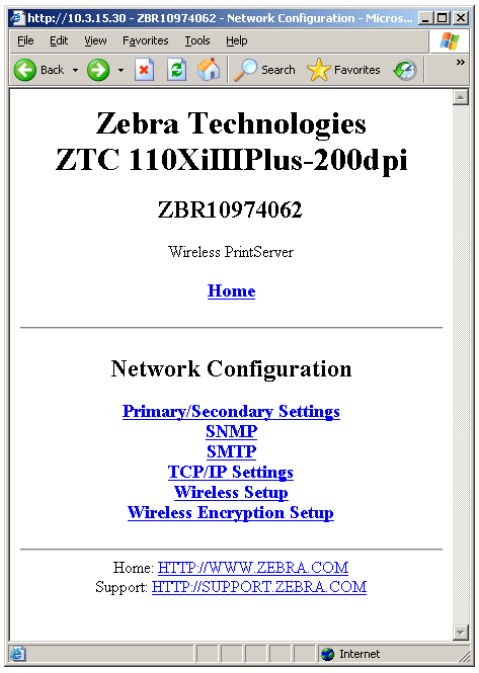


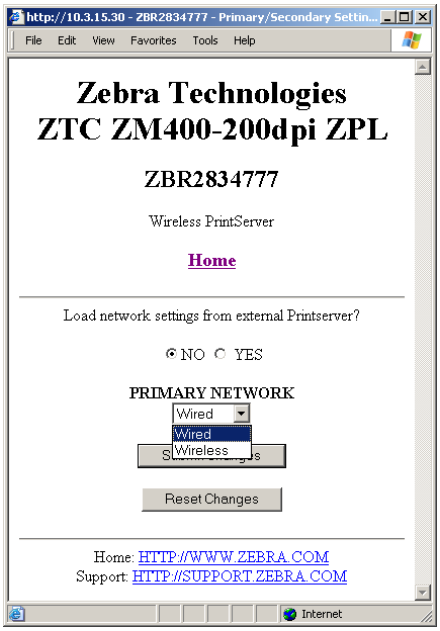
Table 18 • Subscreens: Network Communications Setup

Primary/Secondary Settings

X60.15.x

http://10.3.15.30 - ZBR3258042 - Primary/Secondary Settings - M...
File Edit View Favorites Tools Help
Back Search Favorites
Zebra Technologies
ZTC 140XiIIIPlus-200dpi
ZBR3258042
Wireless PrintServer
Home
What device should be used to load the LAN/WLAN Settings?
Printer PrintServer
Do you want to check for a wired printserver at boot time?Skipping this detection (if running wireless only) will greatly decrease time to associate on a wireless network
Check for Wired PS Skip the check for a Wired PS
Submit Changes
Reset Changes
Home: HTTP://WWW.ZEBRA.COM
Support: HTTP://SUPPORT.ZEBRA.COM
Done
Internet

V63.15.x and R53.16.x (ZM400, ZM600, RZ400, and RZ600)



SNMP

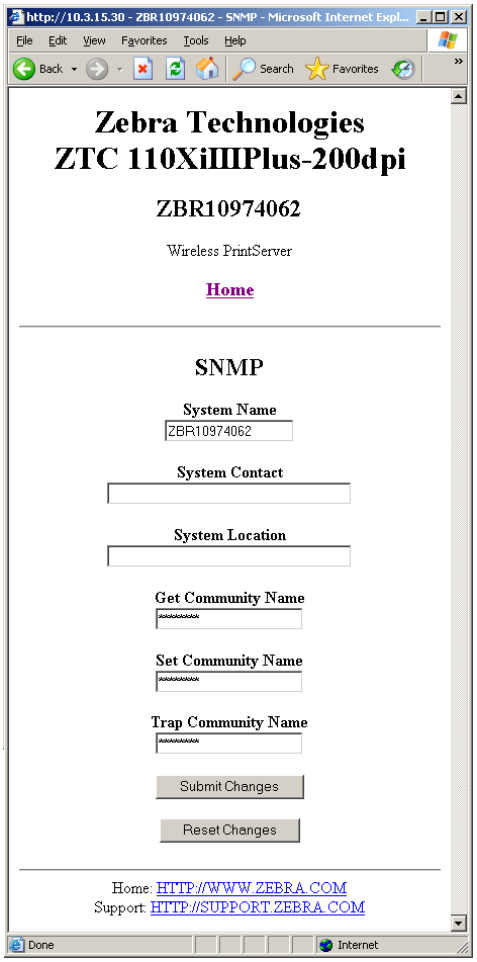


Table 18 • Subscreens: Network Communications Setup (Continued)

SMTP

TCP/IP

X60.15.x and ZSPx

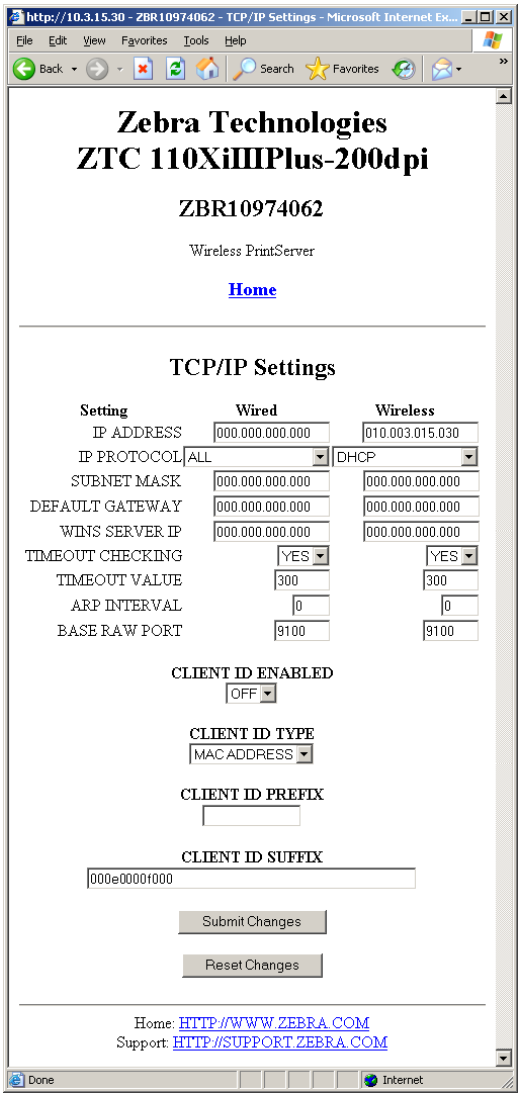


Table 18 • Subscreens: Network Communications Setup (Continued)

TCP/IP

V63.15.x and R53.16.x (ZM400, ZM600, RZ400, and RZ600)

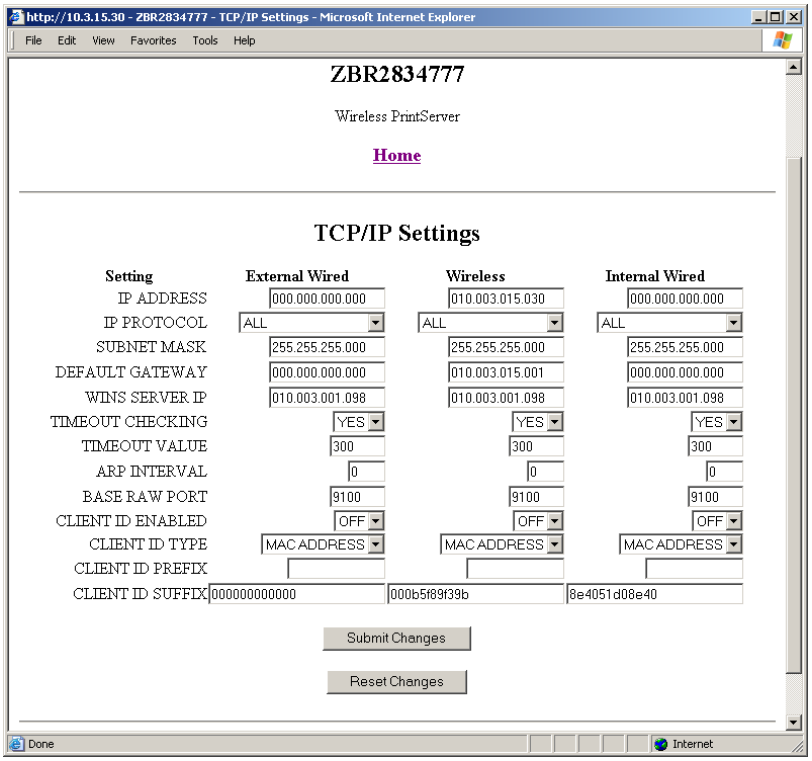
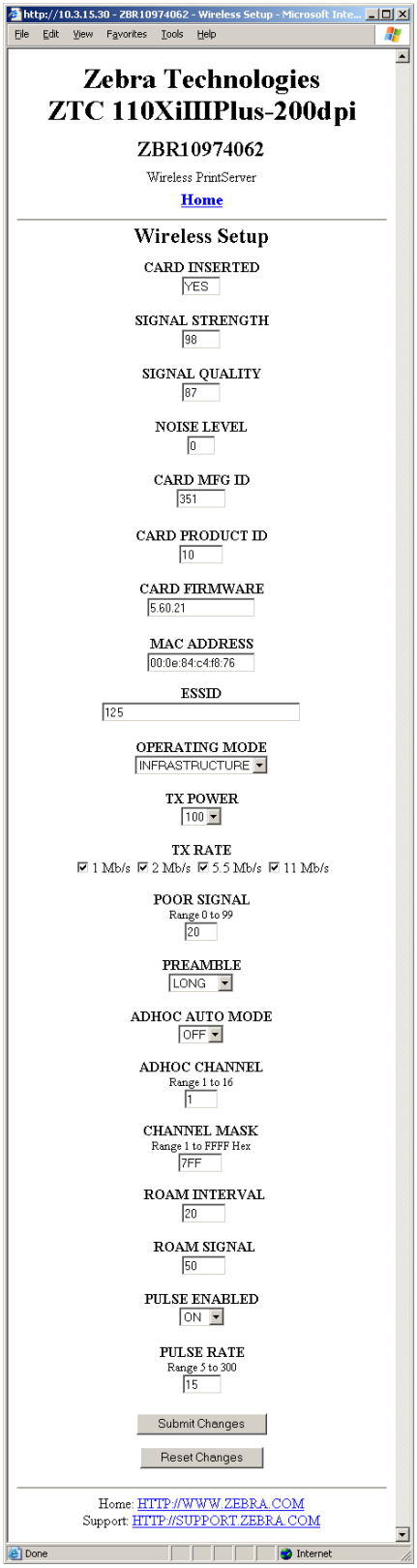
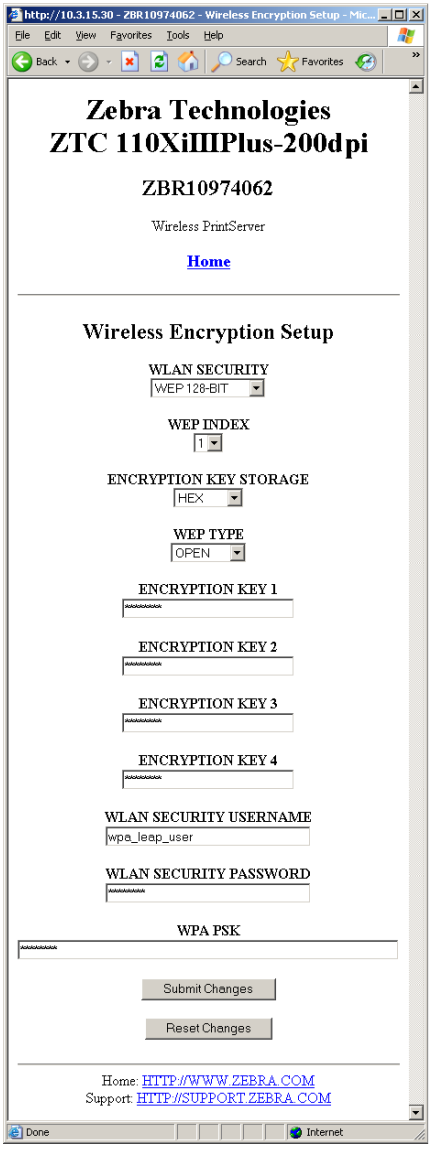


Table 18 • Subscreens: Network Communications Setup (Continued)

Wireless Setup



Wireless Encryption Setup



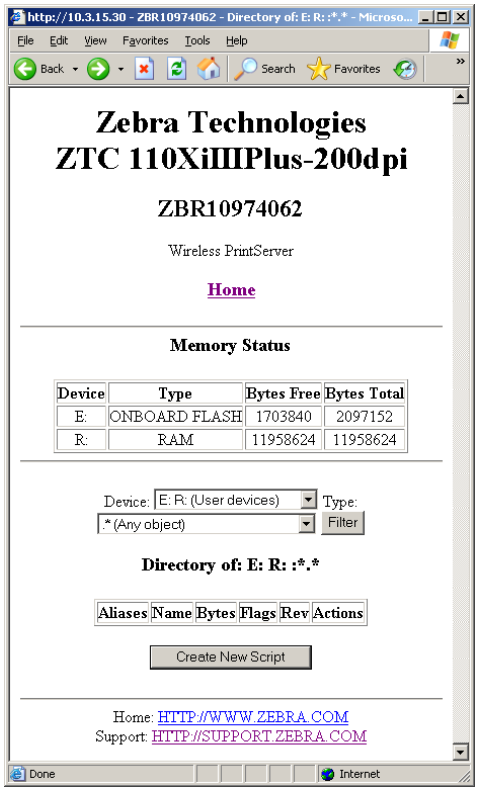
Directory Listing

The directory page lists all file system devices (A:, E:, R:, Z:). The size, name, and location for each stored object are displayed.

To create a new item on the Directory Listing screen, complete these steps:

1. On the printer home page, click **Directory Listing**.

   The Directory Listing screen displays.



2. From the Directory Listing screen, click **Create New Script**.

   The Create New Script screen displays.

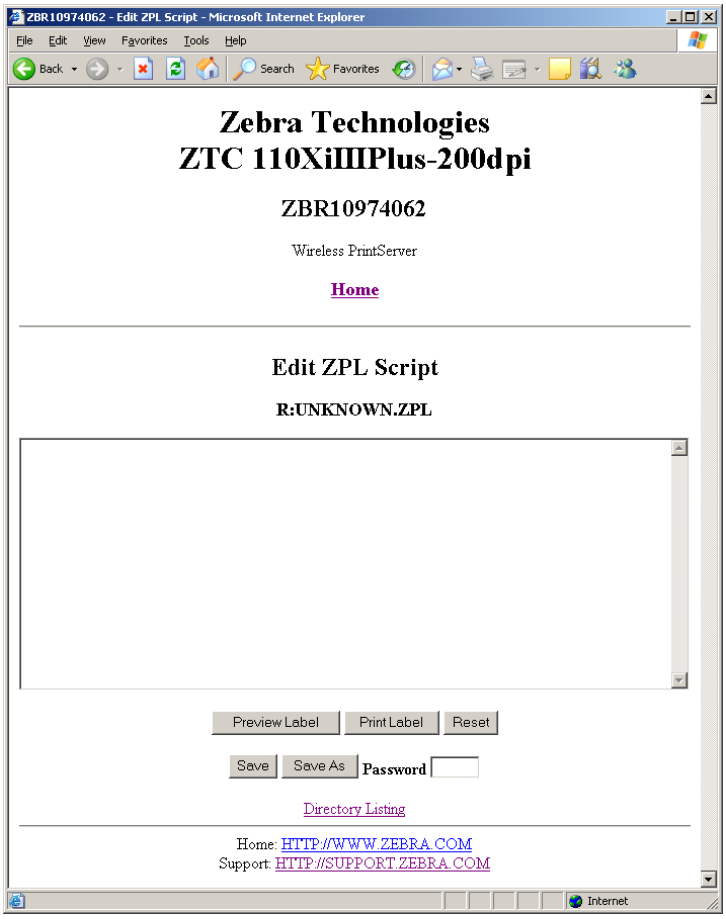
3. Select a device type from the drop-down menu to indicate a memory location that is appropriate to your needs.

   - **E: (ONBOARD FLASH)—**non-volatile memory, which is persistent across a power cycle.
   - **R: (RAM)—**volatile memory, which is not persistent across a power cycle.
   - **Z: (PRINTER INTERNAL MEMORY)—**non-volatile memory where the printer's internal bar codes and fonts are stored. You can print a list of the bar codes and fonts through the printer's control panel. Refer to the User Guide for your printer for instructions on listing the fonts and bar codes.

4. Type a name for the file in the Name field.

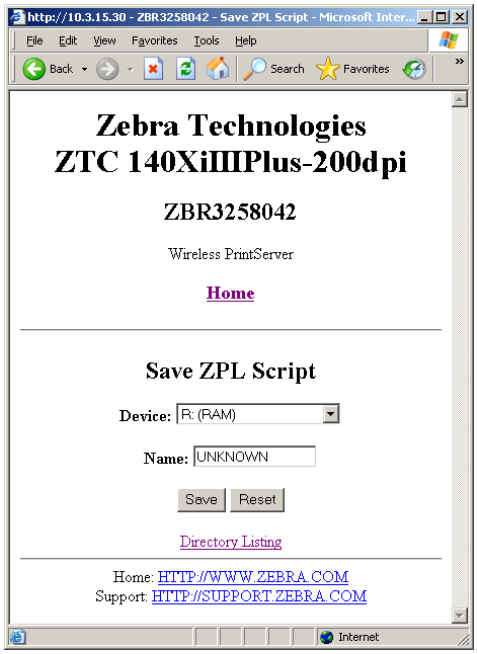
5. Click **Edit**.

The Edit ZPL Script screen displays.



6. Enter the ZPL code in the text field.

7. Click one of the available buttons:

Button	Function/Operation
Preview Label	Displays a graphic representation of the label that results from the ZPL code.
Print Label	Sends the ZPL code to the printer.
Reset	Clears the text field.
Save	**a.** Enter the printer password in the password field. **b.** Click **Save**. If the correct password was entered, saves the label to the ZPL file name entered on the Create New Script screen.
Save As	**a.** Enter the printer password in the password field. **b.** Click **Save As**. The Save ZPL Script screen displays.  **c.** Enter a file name in the Name field. **d.** Click **Save**. If the correct password was entered on the Edit ZPL Script screen, the file is saved.

Alert Setup

For the printer to interact with ZebraNet Alert, SNMP settings must be established in these areas:

- the printer, via the WebView interface
- the Alert Printer Management Utility for logging SNMP traps

The ZebraLink messaging system provides for more than SNMP notification. Alerts can be routed to various destinations:

- TCP
- UDP
- e-mail
- serial port
- parallel port destinations

To view Alert Setup, complete these steps:

1. From the printer home page, click **Alert Setup**.

   The Alert Messaging System screen displays.

Establishing E-Mail Alert Messaging

ZebraNet Alert allows printer errors to be sent directly to any valid e-mail address. You can set up multiple e-mail addresses for routing different error messages or split notifications between e-mail and other network management tools.

To begin receiving e-mail notification of errors, complete these steps:

1. From the Alert Messaging System screen, click **Add Alert Message**.

   The Add Alert Message screen displays.

2. From the drop-down menu, specify the condition to send over e-mail, such as `HEAD ELEMENT BAD` or `PAPER OUT`.
3. Select a destination from the drop-down menu.
4. Enter a valid e-mail address to which the messages will be sent. (The Port field can be ignored for e-mail setup.)
5. Enter the printer password.
6. Click **Add Alert Message**.
7. On the add alert message confirmation page, click **Home** to return to the printer's home page.

8. From the printer's home page, click **View and Modify Printer Settings**. (You may be prompted for the printer's password if it was not entered recently.)

   The View and Modify Printer Settings screen displays.

9. Click **Network Configuration**.

   The Network Configuration Menu displays.

10. Click **SMTP**.

    The SMTP Setup screen displays.

11. Specify your SMTP server address and Print Server domain.

12. Click **Submit Changes**.

    The printer displays the following:

    Changes were successfully saved (temporarily).

13. Click **View and Modify Printer Settings**.

    The View and Modify Printer Settings page for your printer returns (see Figure 9 on page 67).

14. Click **Save Current Configuration**.

    The printer displays the following:

    Current configuration saved.

Printer Controls

This page offers control over basic printer functions.

To view Printer Controls, complete these steps:

1. From the printer home page, click **Printer Controls**.

   The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

   The printer displays the following:

   Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed

4. Click on the statement.

   This Printer Controls screen displays.

5. Click one of the available buttons:

Button	Function
Pause	Toggles the pause option on the printer.
Feed	Causes printer to feed one label.
Cancel One Format	Cancels the currently printing format.
Cancel All Formats	Cancels all formats.
Reset Printer	Causes the printer to perform its standard reset without cycling power. **a.** Click **Reset Printer**. The printer prompts **Are you sure you want to reset the printer?** **b.** Click **Reset**. The printer resets itself.

Print Server Settings

This section provides you with instructions for viewing the current print server settings.

To apply changes made in this section, use the default user ID and password:

- User ID: **admin**
- Password: **1234**

To view the print server menu, complete these steps:

1. From the printer home page, click **Print Server Settings**.

   The Print Server screen opens. The Network Configuration Menu displays. Table 19 shows the screens that appear when you click on the menu selections on this page.

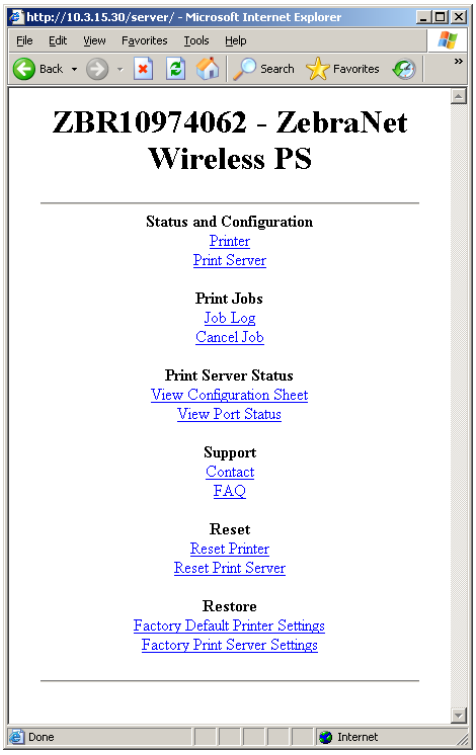


Table 19 • Subscreens: Print Server Settings

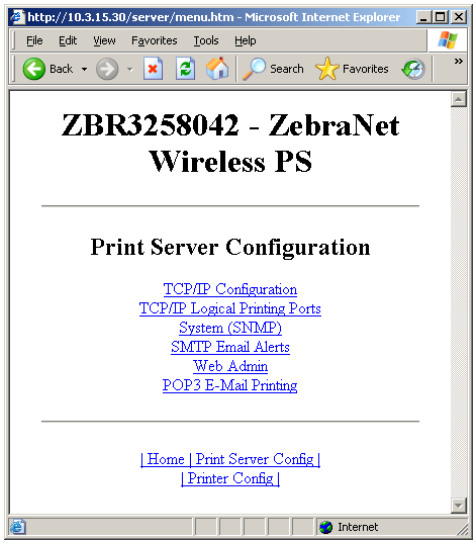
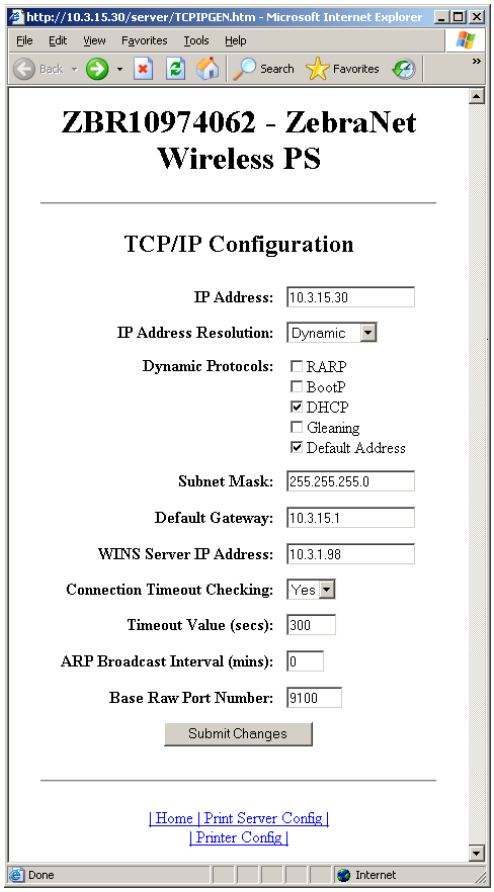
Printer Returns to printer home page.	
Print Server 	The Print Server Configuration screen allows you to configure the following print server categories. Click the links that follow to go to the screen descriptions. • TCP/IP Configuration • TCP/IP Logical Printing Ports • System (SNMP) • SMTP Email Alerts • Web Admin • POP3 E-Mail Printing

Table 19 • Subscreens: Print Server Settings (Continued)

Print Server: TCP/IP Configuration


http://10.3.15.30/server/TCPIPGEN.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
ZBR10974062 - ZebraNet Wireless PS
TCP/IP Configuration
IP Address: 10.3.15.30
IP Address Resolution: Dynamic
Dynamic Protocols: RARP BootP DHCP Gleaning Default Address
Subnet Mask: 255.255.255.0
Default Gateway: 10.3.15.1
WINS Server IP Address: 10.3.1.98
Connection Timeout Checking: Yes
Timeout Value (secs): 300
ARP Broadcast Interval (mins): 0
Base Raw Port Number: 9100
Submit Changes
| Home | Print Server Config |
| Printer Config |
Done
Internet

Print Server: TCP/IP Logical Printing Ports

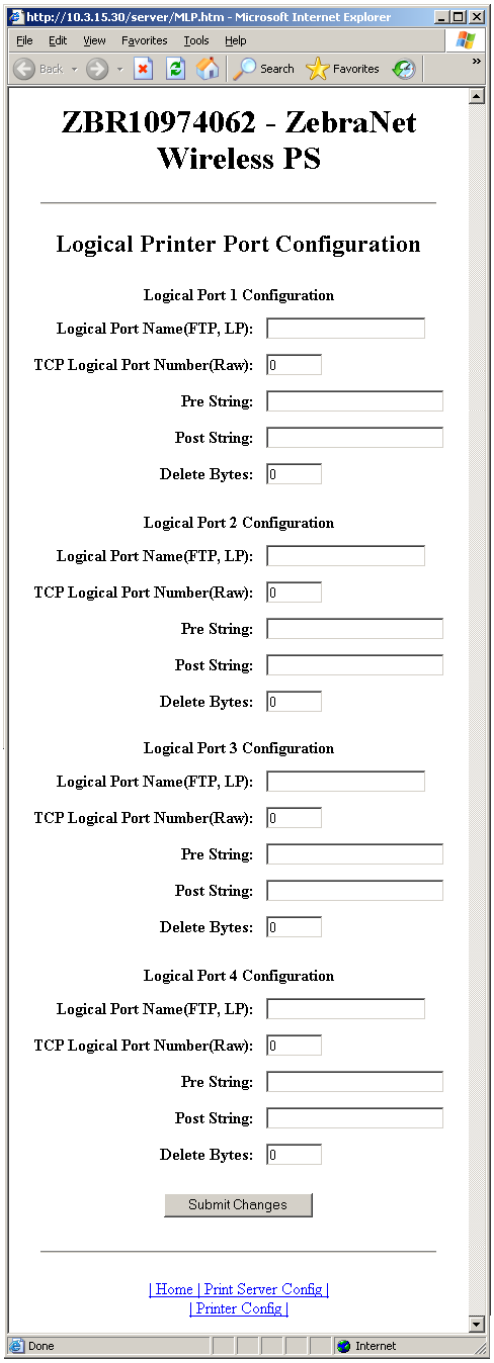
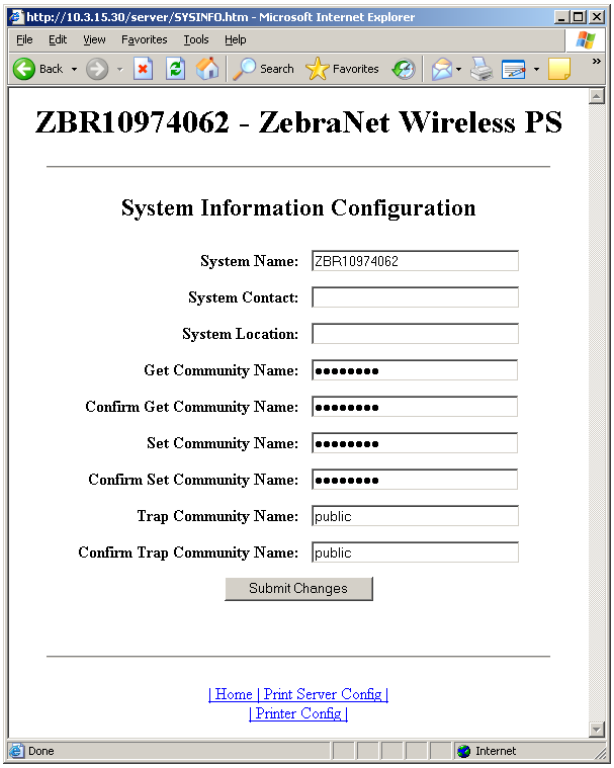


Table 19 • Subscreens: Print Server Settings (Continued)

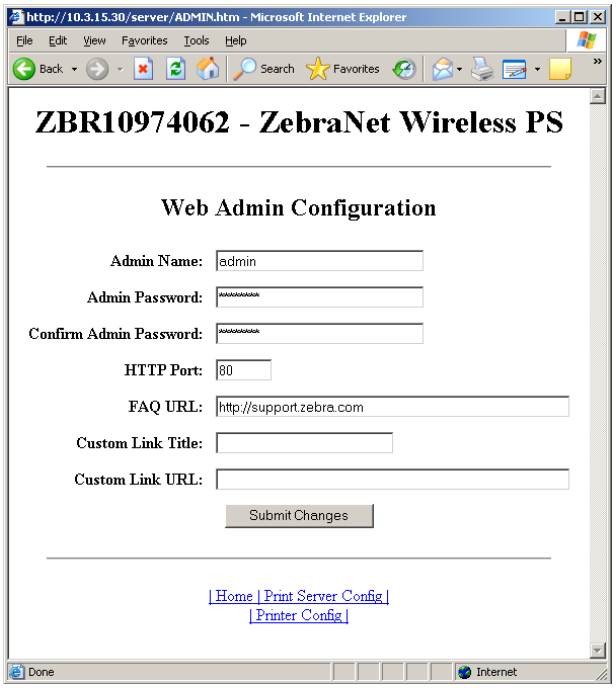
Print Server: System (SNMP)



Print Server: SMTP Email Alerts

http://10.3.15.30/server/SMTP.htm - Microsoft Internet Explorer
ZBR10974062 - ZebraNet Wireless PS
SMTP Email Alert Configuration
SMTP Server Address: 0.0.0.0
Print Server Domain (optional): ZBRPrintServer.com
Submit Changes
| Home | Print Server Config |
| Printer Config |

Print Server: Web Admin



Print Server: POP3 E-Mail Printing

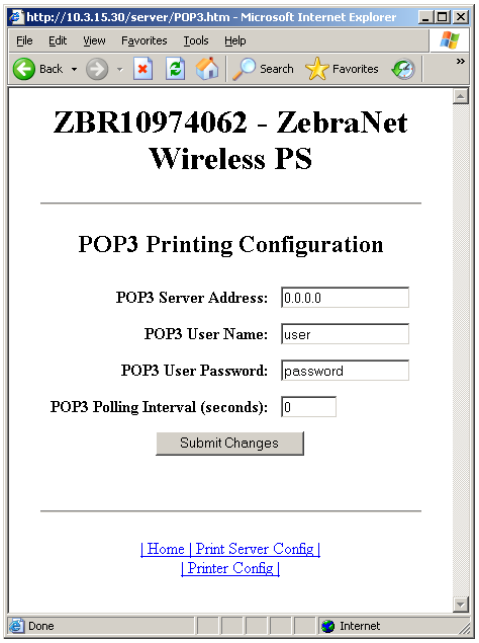
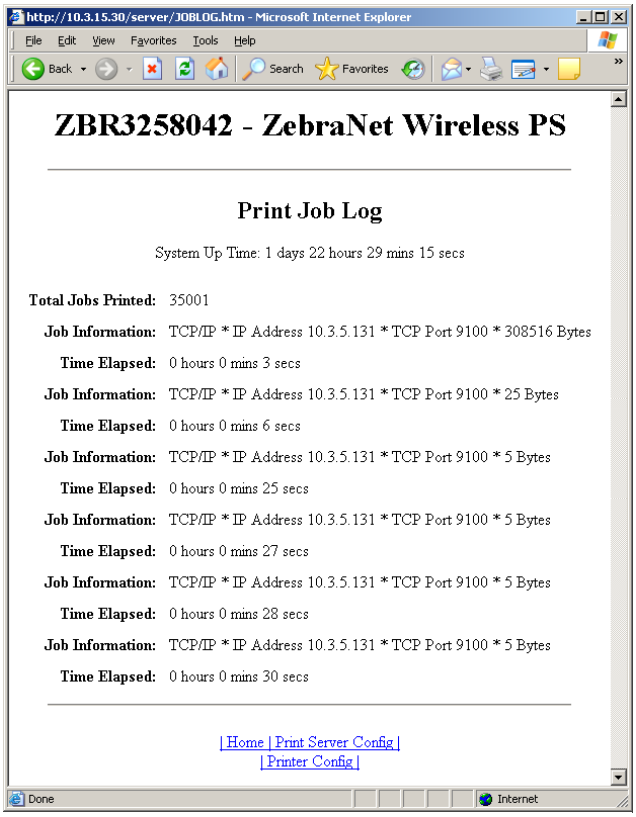

http://10.3.15.30/server/POP3.htm - Microsoft Internet Explorer
ZBR10974062 - ZebraNet Wireless PS
POP3 Printing Configuration
POP3 Server Address: 0.0.0.0
POP3 User Name: user
POP3 User Password: password
POP3 Polling Interval (seconds): 0
Submit Changes
| Home | Print Server Config |
| Printer Config |

Table 19 • Subscreens: Print Server Settings (Continued)

Job Log


http://10.3.15.30/server/JOBLOG.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
ZBR3258042 - ZebraNet Wireless PS
Print Job Log
System Up Time: 1 days 22 hours 29 mins 15 secs
Total Jobs Printed: 35001
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 308516 Bytes
Time Elapsed: 0 hours 0 mins 3 secs
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 25 Bytes
Time Elapsed: 0 hours 0 mins 6 secs
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 5 Bytes
Time Elapsed: 0 hours 0 mins 25 secs
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 5 Bytes
Time Elapsed: 0 hours 0 mins 27 secs
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 5 Bytes
Time Elapsed: 0 hours 0 mins 28 secs
Job Information: TCP/IP * IP Address 10.3.5.131 * TCP Port 9100 * 5 Bytes
Time Elapsed: 0 hours 0 mins 30 secs
| Home | Print Server Config |
| Printer Config |
Done
Internet

Cancel Job

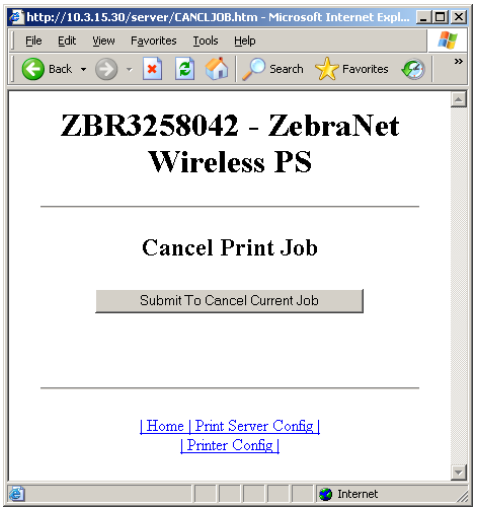
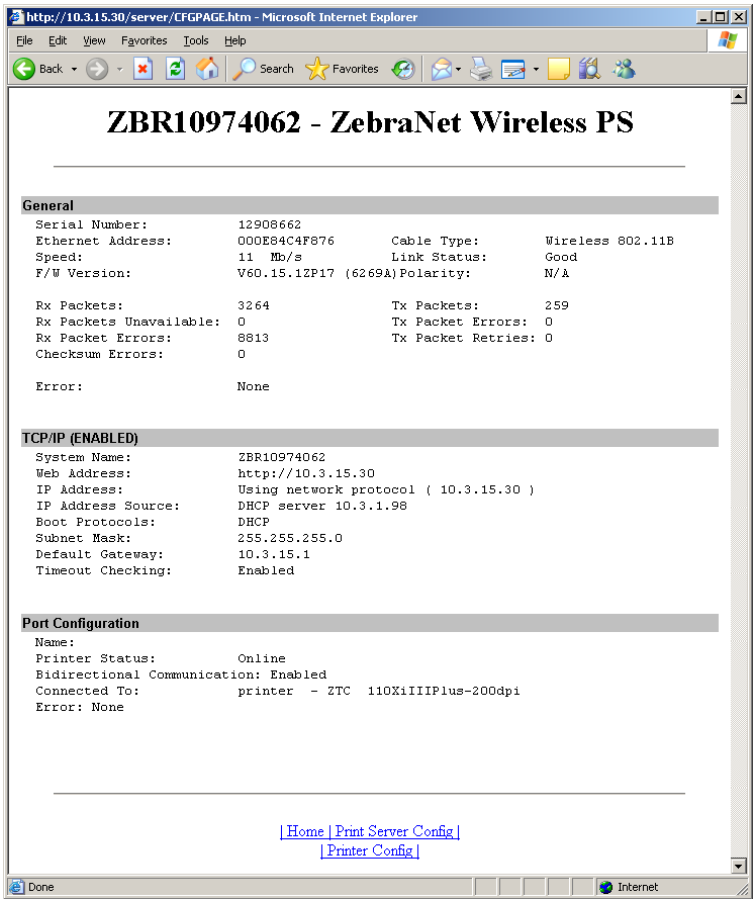
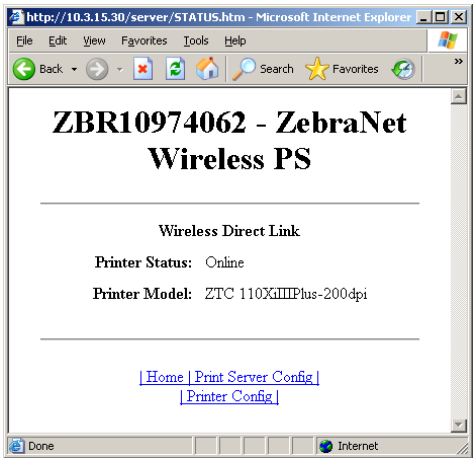

http://10.3.15.30/server/CANCLJOB.htm - Microsoft Internet Expl...
File Edit View Favorites Tools Help
Back Search Favorites
ZBR3258042 - ZebraNet Wireless PS
Cancel Print Job
Submit To Cancel Current Job
| Home | Print Server Config |
| Printer Config |
Internet

Table 19 • Subscreens: Print Server Settings (Continued)

View Configuration Sheet


http://10.3.15.30/server/CFGPAGE.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
ZBR10974062 - ZebraNet Wireless PS
General
Serial Number: 12908662
Ethernet Address: 000E84C4F876 Cable Type: Wireless 802.11B
Speed: 11 Mb/s Link Status: Good
F/W Version: V60.15.1ZP17 (6269A) Polarity: N/A
Rx Packets: 3264 Tx Packets: 259
Rx Packets Unavailable: 0 Tx Packet Errors: 0
Rx Packet Errors: 8813 Tx Packet Retries: 0
Checksum Errors: 0
Error: None
TCP/IP (ENABLED)
System Name: ZBR10974062
Web Address: http://10.3.15.30
IP Address: Using network protocol (10.3.15.30)
IP Address Source: DHCP server 10.3.1.98
Boot Protocols: DHCP
Subnet Mask: 255.255.255.0
Default Gateway: 10.3.15.1
Timeout Checking: Enabled
Port Configuration
Name:
Printer Status: Online
Bidirectional Communication: Enabled
Connected To: printer - ZTC 110XiIIIPlus-200dpi
Error: None
| Home | Print Server Config |
| Printer Config |
Done
Internet

View Port Status



Contact

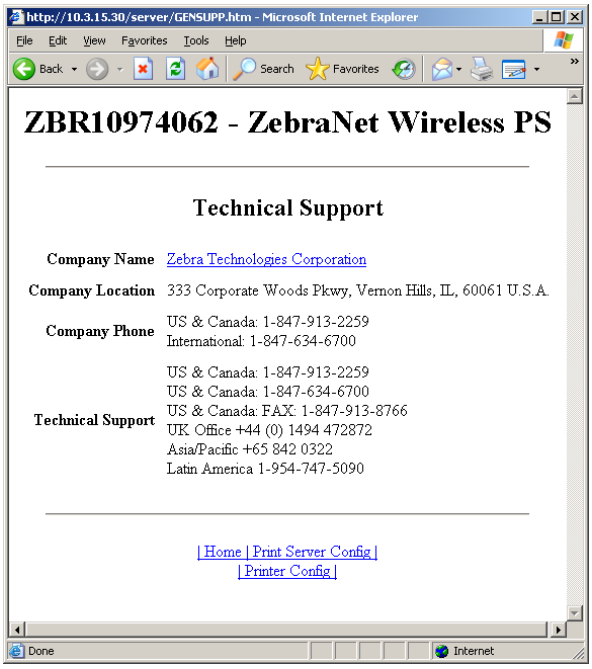
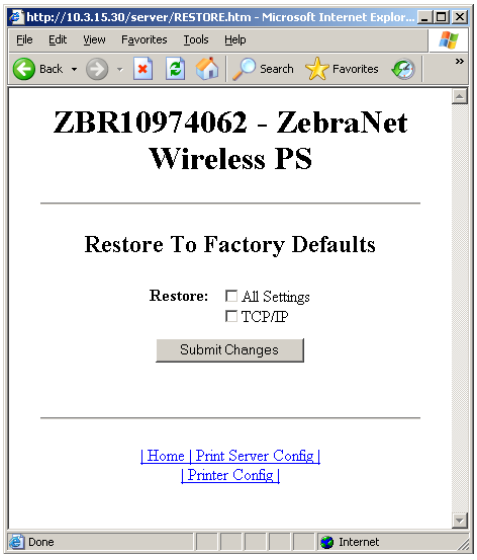

http://10.3.15.30/server/GENSUPP.htm - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
ZBR10974062 - ZebraNet Wireless PS
Technical Support
Company Name Zebra Technologies Corporation
Company Location 333 Corporate Woods Pkwy, Vernon Hills, IL, 60061 U.S.A.
Company Phone US & Canada: 1-847-913-2259
International: 1-847-634-6700
Technical Support US & Canada: 1-847-913-2259
US & Canada: 1-847-634-6700
US & Canada: FAX: 1-847-913-8766
UK Office +44 (0) 1494 472872
Asia/Pacific +65 842 0322
Latin America 1-954-747-5090
| Home | Print Server Config |
| Printer Config |
Done
Internet

Table 19 • Subscreens: Print Server Settings (Continued)

FAQ Goes to http://support.zebra.com.	**Reset Printer** Goes to the Printer Controls page. See *Printer Controls* on page 84.
Reset Print Server 	**(Restore) Factory Default Printer Settings** Returns to the View and Modify Printer Settings page. See *View and Modify Printer Settings* on page 67.
(Restore) Factory Print Server Settings 	

6

ZPL Commands for Wireless Operation

This section contains ZPL commands for configuring and running the ZebraNet wireless print servers.

Contents

^KC Set Client Identifier (Option 61) 94
^NB Search for Wired Print Server during Network Boot. 95
^NC Select the Primary Network Device 96
^ND Change Network Settings 97
^NN Set SNMP 99
^NP Set Primary/Secondary Device 100
^NT Set SMTP. 101
^NW Set Web Authentication Timeout Value 102
^WA Set Antenna Parameters 103
^WE Set WEP Mode. 104
^WI Change Wireless Network Settings 106
^WL Set LEAP Parameters 108
~WL Print Network Configuration Label 109
^WP Set Wireless Password 110
^WR Set Transmit Rate 111
~WR Reset Wireless Radio Card and Print Server. 112
^WS Set Wireless Radio Card Values 113
^WX Configure Wireless Securities 115
Supporting Parameters for Different Security Types 119

^KC

Set Client Identifier (Option 61)

Description The ^KC command allows the print server to have its own client identifier (CID).

Format ^KCa,b,c,d

The following table identifies the parameters for this format.

Parameters	Details
a = enable or disable	*Accepted Values:* 0 = disable (default) 1 = enabled, use MAC address 2 = enabled, ASCII value 3 = enabled, HEX value *Default Value:* 0
b = device	*Accepted Values:* 0 = all devices 1 = wireless 2 = external wired * 3 = internal wired *Default Value:* 1
c = prefix (optional)	*Accepted Values:* 11 ASCII characters or 22 hexadecimal values. The prefix can be cleared by defaulting the network settings on the printer.
d = identifier	*Accepted Values:* 60 ASCII characters or 120 hexadecimal values. Minimum field length is 2 bytes. The suffix can be cleared by defaulting the network settings on the printer.

* This applies only to the Zebra ZM400™, ZM600™, RZ400™, or RZ600™ printer when it is used with the external ZebraNet 10/100 print server using firmware v1.1.5.

^NB

Search for Wired Print Server during Network Boot

Description Use this command to tell the printer whether to search for a wired print server at bootup. This command is ignored on the Zebra ZM400, ZM600, RZ400, and RZ600 printers.

Note • Only one print server can be installed in the S4M at one time, so this check does not occur.

Table 20 identifies which device becomes the active print server under different conditions.

Table 20 • Results of Check for Wired Print Server

If the Check for Wired Print Server is set to:	Installed and Connected to a Live Ethernet Network		Then, the Active Print Server will be:
	Wired	Wireless*	
Skip	X	X	Wireless
	X		Wired
		X	Wireless
Check	X	X	Wired
	X		Wired
		X	Wireless

* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

Format ^NBa

The following table identifies the parameters for this format.

Parameters	Details
a = check for wired print server at boot time	*Accepted Values:* C (CHECK), S (SKIP CHECK) *Default Value:* S

^NC

Select the Primary Network Device

Description The ^NC command selects the wired or wireless print server as the primary network device. This command is supported only on Zebra ZM400/ZM600™ and RZ400/RZ600™ printers.

The ZM400, ZM600, RZ400, and RZ600 printers support the simultaneous installation of an internal, external, and a wireless print server. Even though all three print servers may be installed, only one is connected to the network and is the active print server. Table 21 outlines priorities and identifies which device becomes the active print server when multiple print servers are installed.

Table 21 • Effect of Primary Network Setting on Active Print Server

If the Primary Network is set to:	Installed and Connected to a Live Ethernet Network			Then, the Active Print Server will be:
	Internal	External	Wireless*	
Wired	X	X	X	Internal
		X	X	External
			X	Wireless
Wireless	X	X	X	Wireless
	X	X		Internal
		X		External

* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

Format ^NCa

This table identifies the parameters for this format:

Parameters	Details
a = primary network device	*Accepted Values:* 1 = wired primary 2 = wireless primary *Default Value:* 1 must be an accepted value or it is ignored

^ND

Change Network Settings

Description The ^ND command changes the network settings on Zebra ZM400/ZM600™ and S4M™ printers running V53.15.xZ or later or on RZ400/RZ600™ printers running R53.16.x or later.

For the external wired print server settings, the ^ND command is the same as the ^NS command. For the wireless print server settings, the ^ND command is the same as the ^WI command.

Format ^NDa,b,c,d,e,f,g,h,i,j

This table identifies the parameters for this format:

Parameters	Details
a = the device that is being modified	*Accepted Values:* 1 = external wired 2 = internal wired * 3 = wireless
b = IP resolution	*Accepted Values:* A = All B = BOOTP C = DHCP and BOOTP D = DHCP G = Gleaning only (Not recommended when the Wireless Print Server or Wireless Plus Print Server is installed.) R = RARP P = Permanent *Default Value:* A
c = IP address	*Accepted Values:* Any properly formatted IP address in the xxx.xxx.xxx.xxx format.
d = subnet mask	*Accepted Values:* Any properly formatted subnet mask in the xxx.xxx.xxx.xxx format.
e = default gateway	*Accepted Values:* Any properly formatted gateway in the xxx.xxx.xxx.xxx format.
f = WINS server address	*Accepted Values:* Any properly formatted WINS server in the xxx.xxx.xxx.xxx format.
g = connection timeout checking	*Accepted Values:* Y = yes N = no *Default Value:* Y
h = timeout value	Time, in seconds, before the connection times out. *Accepted Values:* 0 through 9999 *Default Value:* 300

Parameters	Details
`i` = ARP broadcast interval	Time, in minutes, that the broadcast is sent to update the device's ARP cache. *Accepted Values:* `0` through `30` *Default Value:* `0` (no ARP sent)
`j` = base raw port number	The port number that the printer should use for its RAW data. *Accepted Values:* `1` through `65535` *Default Value:* `9100`

* This value is supported on Zebra G-Series™ printers.

^NN

Set SNMP

Description Use this command to set the Simple Network Management Protocol (SNMP) parameters.

Format ^NNa,b,c,d,e,f

The following table identifies the parameters for this format.

Parameters	Details
a = system name	Same as printer name. *Accepted Values:* Up to 17 alphanumeric characters
b = system contact	Any contact information as desired (such as a name or phrase) *Accepted Values:* Up to 50 alphanumeric characters
c = system location	The printer's model information. *Accepted Values:* Up to 50 alphanumeric characters
d = get community name	*Accepted Values:* Up to 19 alphanumeric characters *Default Value:* `public`
e = set community name	*Accepted Values:* Up to 19 alphanumeric characters *Default Value:* `public`
f = trap community name	*Accepted Values:* Up to 20 alphanumeric characters *Default Value:* `public`

^NP

Set Primary/Secondary Device

Description Use this command to specify whether to use the printer's or the print server's LAN/WLAN settings at boot time. The default is to use the printer's settings.

When the printer is set as the primary device, you can set it up using ZPL commands or the Wireless Setup Wizard utility, and any wired print server inserted into the printer will use those settings. The drawbacks to using the printer as primary are:

- Any wired print server inserted into the printer will lose its original settings if the printer is set to check for the wired print server (see *^NB* on page 95)
- GLEANING ONLY for IP PROTOCOL will no longer work.

Format ^NPa

The following table identifies the parameters for this format.

Parameters	Details
a = device to use as primary	*Accepted Values:* P = PRINTER M = MPS/PRINTSERVER *Default Value:* P

^NT

Set SMTP

Description Use this command to set the Simple Mail Transfer Protocol (SMTP) parameters. This allows you to set the e-mail settings for alerts.

Format ^NTa,b

The following table identifies the parameters for this format.

Parameters	Details
a = SMTP server address	*Accepted Values:* Any properly formatted server address in the xxx.xxx.xxx.xxx format
b = print server domain	*Accepted Values:* Any properly formatted print server domain name. A domain name is one or more labels separated by a period (“dot”), and a label consists of letters, numbers, and hyphens. An example of a domain name is zebra.com

^NW

Set Web Authentication Timeout Value

Description Use this command to set the timeout value for the printer home page. The printer will prompt for the printer password only the first time that certain screens are accessed until 1) the web authentication timeout value is reached (default value is 5 minutes) or 2) the printer is reset. At that time, the printer will prompt for the password again.

Format ^NWa

The following table identifies the parameters for this format.

Parameters	Details
a = timeout value	The timeout value in minutes for an IP address to be authenticated to the printer web pages. *Accepted Values:* 0 (no secure pages can be accessed without entering the printer password) to 255 minutes *Default Value:* 5

^WA

Set Antenna Parameters

Description Use this command to set the values for the receive and transmit antenna.

Format ^WAa,b

The following table identifies the parameters for this format.

Parameters	Details
a = receive antenna	*Accepted Values:* D (Diversity), L (Left), R (Right) *Default Value:* D
b = transmit antenna	*Accepted Values:* D (Diversity), L (Left), R (Right) *Default Value:* D

^WE

Set WEP Mode

Note • The ^WE command is provided only for backward-compatibility with printers using firmware prior to V50.15.x, V53.15.x, or X60.15.x. For these firmware versions and later, use *^WX* on page 115 to set the security type and related parameters.

Description Use this command to command enable Wired Equivalent Privacy (WEP) mode and set WEP values. WEP is a security protocol for wireless local area networks (WLANs).

Be careful to include the exact number of commas required for this command when setting encryption keys (parameters e through h). A missing or extra comma will cause the keys to be stored in the wrong slots and can prevent the printer from joining the wireless network.

Format ^WEa,b,c,d,e,f,g,h

The following table identifies the parameters for this format.

Parameters	Details
a = encryption mode	*Accepted Values:* OFF, 40 (40-bit encryption), 128 (128-bit encryption) *Default Value:* OFF
b = encryption index	Tells the printer which encryption key to use. *Accepted Values:* 1 (Key 1), 2 (Key 2), 3 (Key 3), 4 (Key 4) *Default Value:* 1
c = authentication type	*Accepted Values:* O (Open System), S (Shared Key) *Default Value:* O **Note •** If you enable Shared Key authentication with Encryption Mode set to OFF, this value resets to Open.
d = encryption key storage	*Accepted Values:* H (Hex key storage), S (string key storage) *Default Value:* H
e, f, g, h = encryption keys 1 through 4	*Accepted Values:* The actual value for the encryption key The encryption mode affects what can be entered for the encryption keys: • For 40-bit, encryption keys can be set to any 5 hex pairs or any 10 alphanumeric characters. • For 128-bit, encryption keys can be set to any 13 hex pairs or any 26 alphanumeric characters. **Note •** When using hex storage, do not add a leading 0x on the WEP key.

Example 1 •This example sets encryption to 40-bit, activates encryption key 1, and sets encryption key 1 to the string `12345`.

```
^WE40,,,,12345
```

In this example, the Encryption Index, Authentication Type, and Encryption Key Storage parameters are left blank with commas as placeholders for the fields. The printer uses the default values for these parameters.

Example 2 •This example sets encryption to 128-bit, activates encryption key 2, and sets encryption keys 1 and 2 to hex values.

```
^WE128,2,,H,12345678901234567890123456,98765432109876543
210987654
```

The value for encryption key 1 is stored and can be activated in the future by the following command:

```
^WE128,1
```

Example 3 •This example sets encryption to 128-bit, activates encryption key 4, and sets encryption key 4 to a hex value.

```
^WE128,4,,H,,,,98765432109876543210987654
```

Values are not required for encryption keys 1 through 3 when setting encryption key 4. In this example, commas are used as placeholders for the fields for encryption keys 1 through 3. Any previously stored values for these encryption keys do not change.

Important • Make sure that you include the exact number of commas required to get to the slot for encryption key 4 (parameter `h`).

^WI

Change Wireless Network Settings

Description Use this command to change the wireless network settings. On Zebra ZM400/ZM600™ and S4M™ printers running V53.15.xZ or later or on RZ400/RZ600™ printers running R53.16.x or later, Zebra recommends using *^ND* on page 97 for these settings.

Format `^WIa,b,c,d,e,f,g,h,i`

The following table identifies the parameters for this format.

Parameters	Details
a = IP resolution	*Accepted Values:* A = All B = BOOTP C = DHCP and BOOTP D = DHCP G = Gleaning only (Not recommended when the Wireless Print Server or Wireless Plus Print Server is installed.) R = RARP P = Permanent *Default Value:* A
b = IP address	*Accepted Values:* Any properly formatted IP address in the xxx.xxx.xxx.xxx format. *Default Value:* 000.000.000.000
c = subnet mask	*Accepted Values:* Any properly formatted subnet mask in the xxx.xxx.xxx.xxx format. *Default Value:* 000.000.000.000
d = default gateway	*Accepted Values:* Any properly formatted gateway in the xxx.xxx.xxx.xxx format. *Default Value:* 000.000.000.000
e = WINS server address	*Accepted Values:* Any properly formatted WINS server in the xxx.xxx.xxx.xxx format. *Default Value:* 000.000.000.000
f = connection timeout checking	*Accepted Values:* Y = yes N = no *Default Value:* Y
g = timeout value	Time, in seconds, before the connection times out. *Accepted Values:* 0 through 9999 *Default Value:* 300

Parameters	Details
h = ARP broadcast interval	Time, in minutes, that the broadcast is sent to update the device's ARP cache. *Accepted Values:* 0 through 30 *Default Value:* 0 (no ARP sent)
i = base raw port number	The port number that the printer should use for its RAW data. *Accepted Values:* 1 through 65535 *Default Value:* 9100

^WL

Set LEAP Parameters

Note • The ^WL command is provided only for backward-compatibility with printers using firmware prior to V50.15.x or X60.15.x. For these firmware versions and later, use *^WX* on page 115 to set the security type and related parameters.

Description Use this command to enable Cisco® Lightweight Extensible Authentication Protocol (LEAP) mode and set parameters. LEAP is user authentication method that is available with some wireless radio cards.

Format ^WLa,b,c

The following table identifies the parameters for this format.

Parameters	Details
a = mode	*Accepted Values:* OFF, ON *Default Value:* OFF
b = user name	*Accepted Values:* 0 to 32 ASCII characters *Default Value:* user
c = password	*Accepted Values:* 0 to 32 ASCII characters *Default Value:* password

~WL

Print Network Configuration Label

Description Use this command to generate a network configuration label (Figure 10).

Format ~WL

Figure 10 • Network Configuration Label

Wireless Print Server

```
Network Configuration

Zebra Technologies
ZTC 140Xi3IIIPlus-200dpi
ZBR3258042

NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.030.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.02.19............. CARD FIRMWARE
00082131b6ba........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Wireless Plus Print Server and Internal Wireless Plus Print Server

ZM and RZ Printers

```
Network Configuration

Zebra Technologies
ZTC ZM400-200dpi ZPL
ZBR2834792

0.0.0 *............. OPTION FIRMWARE
Wired............... PRIMARY NETWORK
NO.................. LOAD FROM EXT?
Internal Wired..... ACTIVE PRINTSRVR

External Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT

Internal Wired*
ALL................. IP PROTOCOL
010.003.004.116.... IP ADDRESS
255.255.255.000.... SUBNET MASK
010.003.004.001.... DEFAULT GATEWAY
010.003.001.098.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
00074d2b4168....... MAC ADDRESS

Wireless
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
300................. TIMEOUT VALUE
000................. ARP INTERVAL
9100................ BASE RAW PORT
NO.................. CARD INSERTED
0000H............... CARD MFG ID
0000H............... CARD PRODUCT ID
000000000000....... MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
OPEN................ WEP TYPE
NONE................ WLAN SECURITY
1................... WEP INDEX
020................. POOR SIGNAL
LONG................ PREAMBLE
NO.................. ASSOCIATED
ON.................. PULSE ENABLED
15 ................. PULSE RATE
OFF................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

Other Printers/Print Engines

```
Network Configuration

Zebra Technologies
ZTC 105SL-200dpi
ZBR12908662

1.10.1729  ........ OPTION FIRMWARE
NO.................. WIRED PS CHECK?
Printer............. LOAD LAN FROM?

Wired
ALL................. IP PROTOCOL
000.000.000.000.... IP ADDRESS
000.000.000.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT

Wireless*
ALL................. IP PROTOCOL
010.003.015.034.... IP ADDRESS
255.255.255.000.... SUBNET MASK
000.000.000.000.... DEFAULT GATEWAY
000.000.000.000.... WINS SERVER IP
YES................. TIMEOUT CHECKING
0300................ TIMEOUT VALUE
0000................ ARP INTERVAL
9100................ BASE RAW PORT
YES................. CARD INSERTED
015FH............... CARD MFG ID
000AH............... CARD PRODUCT ID
5.60.21............. CARD FIRMWARE
000e84c4f876........ MAC ADDRESS
YES................. DRIVER INSTALLED
INFRASTRUCTURE..... OPERATING MODE
125................. ESSID
100................. TX POWER
ON.................. 1 Mb/s
ON.................. 2 Mb/s
ON.................. 5.5 Mb/s
ON.................. 11  Mb/s
11  Mb/s........... CURRENT TX RATE
DIVERSITY........... RECEIVE ANTENNA
DIVERSITY........... XMIT ANTENNA
YES................. ASSOCIATED
NONE................ WLAN SECURITY
OPEN................ WEP TYPE
1................... WEP INDEX
LONG................ PREAMBLE
020................. POOR SIGNAL
ON.................. PULSE ENABLED
15 ................. PULSE RATE
ON.................. INTL MODE
07FFH............... CHANNEL MASK
FIRMWARE IN THIS PRINTER IS COPYRIGHTED
```

^WP

Set Wireless Password

Note • This command does not apply to the S4M.

Description Use this command to set the four-digit wireless password (not the same as the general printer password). If the wireless password is **0000**, the Wireless and Wireless Plus print servers run in an "unprotected" mode, which means that you do not need to enter the wireless password through the control panel to view or modify wireless settings.

If a wireless password is set, the values for the following parameters will not appear through the control panel until the wireless password is entered:

- MAC Address
- ESSID
- WLAN Security
- WEP Type
- WEP Index
- Reset Network

Format ^WPa,b

The following table identifies the parameters for this format.

Parameters	Details
a = old wireless password	*Accepted Values:* 0000 through 9999 *Default Value:* 0000
b = new wireless password	*Accepted Values:* 0000 through 9999 *Default Value:* 0000

^WR

Set Transmit Rate

Description Use this command to change the transmission parameters.

Format `^WRa,b,c,d,e`

The following table identifies the parameters for this format.

Parameters	Details
a = rate 1	Sets the 1 Mb/s transmit rate. *Accepted Values:* Y (On), N (Off)
b = rate 2	Sets the 2 Mb/s transmit rate. *Accepted Values:* Y (On), N (Off)
c = rate 5.5	Sets the 5.5 Mb/s transmit rate. *Accepted Values:* Y (On), N (Off)
d = rate 11	Sets the 11 Mb/s transmit rate. *Accepted Values:* Y (On), N (Off)
e = transmit power	*Accepted Values:* 1, 5, 20, 30, 50, 100

~WR

Reset Wireless Radio Card and Print Server

Description Use this command to reinitialize the wireless radio card and the print server (wired or wireless) when the Wireless or Wireless Plus print server is running. The command also causes any wireless radio card in the printer to reassociate to the wireless network. Same function as the **RESET NETWORK** control panel parameter (see *Reset the Wired or Wireless Network* on page 54 for the S4M or *Reset the Wired or Wireless Network* on page 49 for all other printers).

Format ~WR

^WS

Set Wireless Radio Card Values

Description Use this command to set the wireless radio card values for ESSID, Operating Mode, and Card Preamble.

Format `^WSe,o,p,h,i,j,k`

The following table identifies the parameters for this format.

Parameters	Details
e = ESSID value	*Accepted Values:* Any value up to 32 characters, including all ASCII and Extended ASCII characters, including the space character. When this parameter is left blank, the ESSID is not changed. *Default Value:* 125
o = operating mode	*Accepted Values:* I (Infrastructure), A (Adhoc) *Default Value:* I
p = wireless radio card preamble	*Accepted Values:* L (Long), S (Short) *Default Value:* L
h = wireless pulse .15↑ This parameter is supported in firmware version V60.15.x, V50.15.x, R6x.15.x, R53.15.x, ZSPx, or later.	Adds a pulse to the network traffic generated by the printer. This pulse is necessary with some network configurations to keep the printer online. *Accepted Values:* 1 (Enabled), 0 (Disabled) *Default Value:* 1
i = wireless pulse interval .15↑ This parameter is supported in firmware version V60.15.x, V50.15.x, R6x.15.x, R53.15.x, ZSPx, or later.	Sets the interval at which the wireless pulse is sent when the wireless pulse feature is enabled. *Accepted Values:* 5 to 300 seconds *Default Value:* 15

Parameters	Details
j = channel mask .15↑ This parameter is supported in firmware version X60.15.x, V50.15.x, or later.	For commonly used channel masks, see Table 22. *Accepted Values:* 4 Hexadecimal digits preceded by “0x” (0x0000 to 0xFFFF) *Default Value:* 0x7FF
k = international mode .15↑ This parameter is supported in firmware version X60.15.x, V50.15.x, or later.	*Accepted Values:* 0 (Disabled), 1 (Enabled) *Default Value:* 0

Table 22 • Channel Mask Settings

Region	Channel Mask
United States, Canada, Latin America	0x7FF
Europe, Middle East, Africa, other	0x1FFF
Japan	0x3FFF

^WX

Configure Wireless Securities

Description Use this command to configure the wireless security settings for your printer. Values entered for this command must match what is configured on your WLAN and must be supported by the wireless radio card that you are using.

This command applies to printers with firmware version X60.15.x, V53.15.x, V50.15.x, or later.

Note • When using certificate files, your printer supports:

- Using Privacy Enhanced Mail (PEM) formatted certificate files.
- Using the client certificate and private key as two files, each downloaded separately.
- Using exportable PAC files for EAP-FAST.

The ^WX command replaces individual ZPL commands for different security types. Different security types are described in the *Glossary* on page 217.

Format `^WXa,[zero or more supporting parameters]`

Note • The supporting parameters that are required vary based on the security type that you select. See *Supporting Parameters for Different Security Types* on page 119 for instructions for each security type.

The following table identifies the parameters for this format.

Parameters	Details
a = security type	Enter the two-digit code for the security type that your WLAN uses. For which supporting parameters (b through n) to use with the different security types, see *Supporting Parameters for Different Security Types* on page 119. **Note •** Configuring the printer for WPA also allows the printer to be used in WPA2 environments. *Accepted Values:* 01 to 15 01 = No wireless security is active 02 = WEP 40-bit 03 = WEP 128-bit 04 = EAP-TLS 05 = EAP-TTLS 06 = EAP-FAST 07 = PEAP 08 = LEAP 09 = WPA PSK (Key rotation for WPA2 PSK is supported in firmware version V60.15.7Z, V53.15.7Z, R6x15.x, R53.15.x, ZSPx, and later.) 10 = WPA EAP-TLS 11 = WPA EAP-TTLS 12 = WPA EAP-FAST 13 = WPA PEAP 14 = WPA LEAP 15 = Kerberos *Default Value:* 01
b = WEP encryption index*	Specifies which encryption key to use for WEP encryption. A value must be specified if using WEP 40-bit or WEP 128-bit. *Accepted Values:* 1, 2, 3, 4 *Default Value:* 1
c = WEP authentication type*	Enables the WEP key authentication type. A value must be specified if using WEP 40-bit or WEP 128-bit. *Accepted Values:* O or S O = open system S = shared key *Default Value:* O
d = WEP key type*	Specifies the format of the WEP key. A value must be specified if using WEP 40-bit or WEP 128-bit. *Accepted Values:* H or S H = hex key storage S = string key storage *Default Value:* S

* Not used for all security types

Parameters	Details
e,f,g,h = WEP encryption keys 1 through 4*	Specifies the actual values of any WEP encryption keys to be used. A value must be specified for at least one WEP encryption key if you specify 40-bit or 128-bit WEP encryption for the security type. **Important** • Be careful to include the exact number of commas required for this command when setting encryption keys (parameters e through h). A missing or extra comma will cause the keys to be stored in the wrong slots and can prevent the printer from joining the wireless network. The encryption mode affects what can be entered for the encryption keys: • For 40-bit, encryption keys can be set to any 5 hex pairs or any 10 alphanumeric characters. • For 128-bit, encryption keys can be set to any 13 hex pairs or any 26 alphanumeric characters. **Note** • When using hex storage, do not add a leading 0x on the WEP key. *Accepted Values:* The actual value for the encryption key *Default Value:* None
i = user ID*	Specifies a user ID for security types that require one. A value must be specified if using the following security types: • EAP-TTLS • LEAP • WPA LEAP • PEAP • WPA PEAP • WPA EAP-TTLS • Kerberos *Accepted Values:* The actual value for the user ID. *Default Value:* user

* Not used for all security types

Parameters	Details
j = password*	Specifies a password for security types that require one. A value must be specified if using the following security types: • EAP-TTLS • LEAP • WPA LEAP • PEAP • WPA PEAP • WPA EAP-TTLS • Kerberos *Accepted Values:* The actual value for the password. *Default Value:* password
k = optional private key password*	Specifies an optional private key password for security types that require one. A value must be specified if using the following security types: • EAP-TLS • EAP-FAST • WPA EAP-TLS • WPA EAP-FAST *Accepted Values:* The actual value for the optional private key. *Default Value:* None
l = realm*	Specifies the realm for security types that require it. A value must be specified if using Kerberos. *Accepted Values:* The actual value for the realm. *Default Value:* kerberos
m = Key Distribution Center (KDC)*	Specifies the KDC for security types that require it. A value must be specified if using Kerberos. *Accepted Values:* The actual value for the KDC. *Default Value:* krbtgt"
n = Pre-Shared Key (PSK) value*	Enter the PSK value. This value is calculated and must be the same for each device on the WLAN. Use ZebraNet Bridge to generate the PSK value. A value must be specified if using WPA PSK. **Important** • Do not enter a pass phrase for this field in this command. To use a pass phrase, use the ZebraNet Bridge Enterprise Wireless Setup Wizard (see *Configure Using the Network Setup Wizard* on page 31 for more information). *Accepted Values:* a minimum of 64 hexadecimal digits *Default Value:* None

* Not used for all security types

Supporting Parameters for Different Security Types

The supporting parameters required for this command vary based on the security type that you select. You should not use all of the supporting parameters each time that you use this command, nor will you use extra commas to separate unused fields. Follow the example and format for your specific security type in this section, substituting your own wireless network data.

Security Type 01: No Wireless Security Active

Format ^WX01

Example • This example turns off all wireless securities controlled under this command, but it does not reset the printer's wireless settings to their defaults. To reset all wireless settings, see *Restore Network Parameters to Defaults* on page 55.

```
^XA
^WX01
^JUS^XZ
```

Security Type 02: WEP 40-Bit

Format ^WX02,b,c,d,e,f,g,h

Example • This example configures the printer for WEP 40-bit encryption using index key 1, open authentication, and a hexadecimal WEP key with a value of "A1B2C3D4F5."

```
^XA
^WX02,1,O,H,A1B2C3D4F5,,,
^JUS
^XZ
```

Security Type 03: WEP 128-Bit

Format ^WX03,b,c,d,e,f,g,h

Example • This example configures the printer for WEP 128-bit encryption using index key 2, open authentication, and four hexadecimal WEP keys.

```
^XA
^WX03,2,O,H,00112233445566778,112233445566778899,223344
556677889900,33445566778899011
^JUS
^XZ
```

Security Type 04: EAP-TLS

Format ^WX04,k

Example • This example configures the printer for EAP-TLS authentication with an optional private key password with a value of "private."

```
^XA
^WX04,private
^JUS
^XZ
```

Security Type 05: EAP-TTLS

Format ^WX05,i,j

Example • This example configures the printer for EAP-TTLS authentication, including a user ID of "user" and a password of "password."

```
^XA
^WX05,user,password
^JUS
^XZ
```

Security Type 06: EAP-FAST

Format ^WX06,i,j,k

Example • This example configures the printer for EAP-FAST authentication, including a user ID of "user," a password of "password," and an optional private key of "private."

```
^XA
^WX06,user,password,private
^JUS
^XZ
```

Security Type 07: PEAP

Format ^WX07,i,j

Example • This example configures the printer for PEAP authentication, including a user ID with a value of "user" and a password with a value of "password."

```
^XA
^WX07,user,password
^JUS
^XZ
```

Security Type 08: LEAP

Format ^WX08,i,j

Example • This example configures the printer for LEAP authentication, including a user ID with a value of "user" and a password with a value of "password."

```
^XA
^WX08,user,password
^JUS
^XZ
```

Security Type 09: WPA PSK

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments. Key rotation for WPA2 PSK is supported in firmware version V60.15.7Z, V53.15.7Z, R6x15.x, R53.15.x, ZSPx, and later.

Format ^WX09,n

Example • This example configures the printer for WPA PSK authentication with a PSK value of all zeroes (64 hexadecimal digits).

```
^XA
^WX09,00000000...
^JUS
^XZ
```

Security Type 10: WPA EAP-TLS

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Format `^WX10,k`

Example • This example configures the printer for WPA EAP-TLS authentication with an optional private key password with a value of "`private`."

```
^XA
^WX10,private
^JUS
^XZ
```

Security Type 11: WPA EAP-TTLS

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Format `^WX11,i,j`

Example • This example configures the printer for WPA EAP-TTLS authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
^XA
^WX11,user,password
^JUS
^XZ
```

Security Type 12: WPA EAP-FAST

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Format `^WX12,i,j,k`

Example • This example configures the printer for WPA EAP-FAST authentication, including a user ID of "`user`," a password of "`password`," and an optional private key of "`private`."

```
^XA
^WX12,user,password,private
^JUS
^XZ
```

Security Type 13: WPA PEAP

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Format `^WX13,i,j`

Example • This example configures the printer for WPA PEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
^XA
^WX13,user,password
^JUS
^XZ
```

Security Type 14: WPA LEAP

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Format `^WX14,i,j`

Example • This example configures the printer for WPA LEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
^XA
^WX14,user,password
^JUS
^XZ
```

Security Type 15: Kerberos

Format `^WX15,i,j,l,m`

Example • This example configures the printer for Kerberos encryption, including a Kerberos user ID with a value of "`user`," a Kerberos password with a value of "`password`," a realm of "`zebra`," and a KDC of "`krbtgt`."

```
^XA
^WX15,user,password,zebra,krbtgt
^JUS
^XZ
```

Notes •

7

SGD Wireless Commands

This chapter provides a high-level overview of the wireless Set / Get / Do (SGD) commands and details on each SGD command.

For printer support of SGD commands, see the *ZPL II Progrmming Guide*. A copy of this manual is available at http://www.zebra.com/manuals or on the user CD that came with your printer.

.15↑ SGD commands are available in printers with firmware version V60.15.x, V50.15.x, V61.15.x, V56.15.x, V53.15.xZ, V54.15.x, R60.15.x, R62.15.x, R63.15.x, R65.15.x, or later.

Important • These are important points to note when using ZPL and SGD commands:

- SGD commands are case-sensitive.
- ZPL and SGD commands should be sent to the printer as separate files.
- Certain settings can be controlled by both ZPL and SGD. Configuration changes made in ZPL can affect configuration changes made in SGD.
- Changes made with one command type (ZPL or SGD) will affect the data returned to the host in response to both ZPL and getvar commands. The command type (ZPL or SGD) that was sent last determines the current setting.
- Some RF cards do not support all of the SGD commands.

Overview

This section describes how and why to use the Set / Get / Do (SGD) commands. It also provides an example of a typical command structure.

Note • SGD commands must be terminated by a carriage return or a space and line feed.

SGD commands are commands that allow you to configure all printers that are running supported firmware versions. The printer performs the specified function immediately after receiving the command. The commands are:

- **`setvar`**
- **`getvar`**
- **`do`**

setvar Command

`Setvar` commands:

- are used to configure printer settings to specific values by setting them in the printer
- must be terminated by a space character or a CR/ LF (0x0D, 0x0A)

Important • The setvar command and attributes must be specified in lower case.

getvar Command

`Getvar` commands:

- are used to get the current value of the printer settings
- must be terminated by a space character or CR/LF (0x0D, 0x0A)

The printer responds with the printer setting of “?” if:

- the printer setting does not exist (usually due to incorrect spelling of the printer setting)
- it has not been configured yet

Important • The printer settings and attributes must be specified in lower case.

do Command

Do commands:

- are used to instruct the printer to perform predefined actions
- must be terminated by a space character or a CR/LF (0x0D, 0x0A)

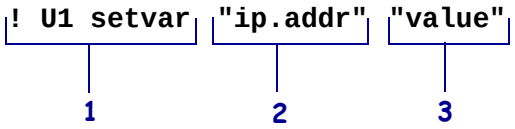
Some Do commands require additional settings which must be enclosed in double quotes.

Important • The values must be specified in lower case.

Command Structure

It is important to understand the structure of the command and its components. A command structure illustration is provided for each command in this guide.

Example • This is an example of a command structure illustration:



1	Command—always preceded with an exclamation point (!) and must be specified in lower case. A space resides between the **!** and **U1** and between **U1** and the command (**setvar** or **getvar**).
2	Attribute—always in double quotes and must be specified in lower case.
3	Chosen value—always in double quotes. Only applicable for **setvar** and **do**.

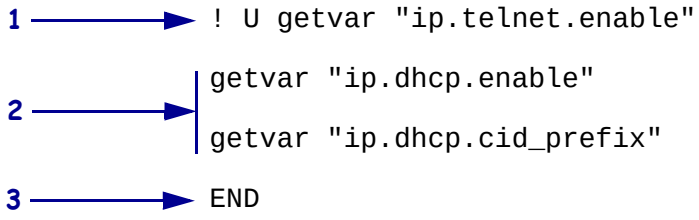
This command must be terminated by a space character or a CR/ LF (0x0D, 0x0A).

Note • Some RF cards do not support all of the SGD commands.

How to Send Multiple SGD Commands

For any `getvar`, `setvar`, or `do` command, if you issue the syntax without the `"1"` and use the END command followed by a space, multiple SGD commands are sent simultaneously.

Example • This syntax shows how you can send multiple `getvar` commands:



1	The command portion of the string does not use the "1" after the "! U".
2	Commands issued after the first command do not require the "! U".
3	The string of commands is terminated by the word "END" with a space after the word, and by a carriage return/ line feed.

card.inserted

Description This command indicates whether the wireless radio card is or is not inserted.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless radio card status. It's inserted or it's not inserted. *Format:* `! U1 getvar "card.inserted"`

Example • In this example, the `getvar` result is `"Inserted"`.

```
! U1 getvar "card.inserted"
```

card.mac_addr

Description This command retrieves the MAC address of the wireless radio card.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the MAC address. *Format:* `! U1 getvar "card.mac_addr"`

Example • In this example, the `getvar` result is the MAC address for the wireless radio card.

```
! U1 getvar "card.mac_addr"
```

ip.addr

Description This command allows you to get or set the printer's IP address.

Type `getvar`; `setvar`

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with its current IP address. *Format:* `! U1 getvar "ip.addr"`
`setvar`	This command instructs the printer to change its current IP address upon powering the printer on. *Format:* `! U1 setvar "ip.addr"` "value" *Values:* any valid IP address *Default:* `"0.0.0.0"`

Note • The `setvar` value of this command can be affected by the `ip.dhcp.enable` command.

Example • This `setvar` example shows the value set to `"10.14.4.235"`.

```
! U1 setvar "ip.addr" "10.14.4.235"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"10.14.4.235"`.

ip.arp_interval

Description This printer setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the ARP interval or the ARP cache time out value in seconds. *Format:* `! U1 getvar "ip.arp_interval"`
`setvar`	This command instructs the printer to change the ARP interval or the ARP cache time out. *Format:* `! U1 setvar "ip.arp_interval" "value"` *Values:* `0 - 30` *Default:* `"0"`

Example • This `setvar` example shows the value set to `"0"`.

```
! U1 setvar "ip.arp_interval" "0"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"0"`.

ip.bootp.enable

Description This printer setting turns BOOTP on or off. BOOTP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a BOOTP server on the local network.

Type `getvar; setvar`

Note • If you are using static IP addressing, the IP protocol must be set to permanent.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current BOOTP setting. *Format:* `! U1 getvar "ip.bootp.enable"`
`setvar`	This command instructs the printer to turn BOOTP on or off. *Format:* `! U1 setvar "ip.bootp.enable"` "value" *Values:* `"off"` = printer does not use BOOTP to get the IP address `"on"` = printer uses BOOTP to get the IP address *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.bootp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if the DHCP is enabled and "ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix. *Format:* ! U1 getvar "ip.dhcp.cid_all"
setvar	This command instructs the printer to change the CID prefix and suffix. *Format:* ! U1 setvar "ip.dhcp.cid_all" "value" *Values:* A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "printer".

```
! U1 setvar "ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) is turned on or off.

Type `getvar; setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the status of the client identifier. *Format:* `! U1 getvar "ip.dhcp.cid_enable"`
`setvar`	This command instructs the printer to set the status of the client identifier. *Format:* `! U1 setvar "ip.dhcp.cid_enable" "value"` *Values:* `"off" =` client identifier is turned off `"on" =` client identifier is turned on *Default:* `"off"`

Example • This `setvar` example shows the value set to `"off"`.

```
! U1 setvar "ip.dhcp.cid_enable" "off"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"off"`.

ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled and "ip.dhcp.cid_type" is set to "0"or "2".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix. *Format:* ! U1 getvar "ip.dhcp.cid_prefix"
setvar	This command instructs the printer to change the CID prefix. *Format:* ! U1 setvar "ip.dhcp.cid_prefix" "value" *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "PRT001".

```
! U1 setvar "ip.dhcp.cid_prefix" "PRT001"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled and "ip.dhcp.cid_type" is set to "0" or "2".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix. *Format:* ! U1 getvar "ip.dhcp.cid_suffix"
setvar	This command instructs the printer to change the CID value. *Format:* ! U1 setvar "ip.dhcp.cid_suffix" "value" *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "printer".

```
! U1 setvar "ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled. A value of "1" means the type of "Ethernet" and the printer's MAC address will be used. A value of "0" or "2" means the client identifier sent will be "ip.dhcp.cid_prefix" concatenated with "ip.dhcp.cid_suffix".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier type. *Format:* ! U1 getvar "ip.dhcp.cid_type"
setvar	This command instructs the printer to enable "synthetic" Client Identifier. *Format:* ! U1 setvar "ip.dhcp.cid_type" "value" *Values:* "0" = ASCII string "1" = wireless radio card's MAC address "2" = HEX value *Default Value:* "1"

Example • This setvar example shows the value set to "1".

```
! U1 setvar "ip.dhcp.cid_type" "1"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "1".

ip.dhcp.enable

Definition This printer setting turns DHCP on or off. DHCP is a method for acquiring an IP address, netmask, and gateway automatically on printer power-up. It requires a DHCP server on the local network.

Type `getvar; setvar`

Note • If you are using static IP addressing, the IP protocol must be set to permanent.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the DHCP status. *Format:* `! U1 getvar "ip.dhcp.enable"`
`setvar`	This command instructs the printer to turn DHCP on or off. *Format:* `! U1 setvar "ip.dhcp.enable"` "value" *Values:* `"off"` = printer does not use DHCP to get the IP address `"on"` = printer uses DHCP to get the IP address *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.dhcp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.ftp.enable

Description This printer setting refers to the FTP protocol setting. This command tells the printer to turn FTP on or off.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the FTP status. *Format:* `! U1 getvar "ip.ftp.enable"`
`setvar`	This command instructs the printer to turn FTP on or off. *Format:* `! U1 setvar "ip.ftp.enable"` "value" *Values:* `"off" =` disables FTP `"on" =` enables FTP *Default:* `"on"`

Example • This `setvar` example shows the FTP status set to `"on"`.

```
! U1 setvar "ip.ftp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is that the FTP status is `"on"`.

ip.gateway

Description This command instructs the printer to change the gateway address.

Type `getvar`; `setvar`

Important • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the gateway address. *Format:* `! U1 getvar "ip.gateway"`
`setvar`	This command instructs the printer to change the gateway address. *Format:* `! U1 setvar "ip.gateway"` "value" *Values:* Any valid gateway address *Default:* `"0.0.0.0"`

Example • This `setvar` example shows the value set to `"10.3.5.1"`.

```
! U1 setvar "ip.gateway" "10.3.5.1"
```

When the `setvar` value is set to `"10.3.5.1"`, the `getvar` result is `"10.3.5.1"`.

ip.http.enable

Description This printer setting refers to the HTTP protocol/web server setting.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the HTTP status. *Format:* `! U1 getvar "ip.http.enable"`
`setvar`	This command instructs the printer to change HTTP to on or off. *Format:* `! U1 setvar "ip.http.enable"` "value" *Values:* `"off" =` disables HTTP protocol `"on" =` enables HTTP protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.http.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.lpd.enable

Description This printer setting refers to the LPD (Line Printer Daemon) protocol setting.

Type `getvar`; `setvar`

Important • LPD communications from the host should be directed to port 515.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the LPD status. *Format:* `! U1 getvar "ip.lpd.enable"`
`setvar`	This command instructs the printer to turn LPD on or off. *Format:* `! U1 setvar "ip.lpd.enable"` "value" *Values:* `"off" =` disables LPD protocol `"on" =` enables LPD protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.lpd.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.netmask

Description This setting refers to the subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with subnet mask. *Format:* `! U1 getvar "ip.netmask"`
`setvar`	This command instructs the printer to change the subnet mask. *Format:* `! U1 setvar "ip.netmask" "`value`"` *Values:* Any valid subnet mask. *Default:* `"255.255.255.0"`

Example • This `setvar` example shows the value set to `"255.255.255.0"`.

```
! U1 setvar "ip.netmask" "255.255.255.0"
```

When the `setvar` value is set to `"255.255.255.0"`, the `getvar` result is `"255.255.255.0"`.

ip.pop3.enable

Description This printer setting determines if the printer queries a POP3 mailbox for mail.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the POP3 status. *Format:* `! U1 getvar "ip.pop3.enable"`
`setvar`	This command instructs the printer to turn POP3 on or off. *Format:* `! U1 setvar "ip.pop3.enable"` "value" *Values:* `"off"` = disables POP3 `"on"` = enables POP3 *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.pop3.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.pop3.password

Description This printer setting refers to the POP3 mailbox password. This only applies if "ip.pop3.enable" is set to on.

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 password. *Format:* ! U1 getvar "ip.pop3.password" For protection a single "*" prints.
setvar	This command instructs the printer to change the POP3 password. *Format:* ! U1 setvar "ip.pop3.password" "value" *Values:* A maximum of 20 alphanumeric characters *Default:* " "

Example • This setvar example shows the value set to "password".

```
! U1 setvar "ip.pop3.password" "password"
```

When the setvar value is set to "password", the getvar result is "*".

ip.pop3.poll

Description This printer setting refers to how frequent (in seconds) the printer queries a POP3 mailbox for new mail. This only applies if the "`ip.pop3.enable`" is set to on.

Type `getvar; setvar`

Note • A poll value of less then thirty seconds is not recommended. The printer is unresponsive for several seconds when polling for email depending on data transfer time from the server to the printer.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the POP3 poll frequency (in seconds). *Format:* `! U1 getvar "ip.pop3.poll"`
`setvar`	This command instructs the printer to change the POP3 poll interval. A value of `"0"` causes the printer to only query the POP3 mailbox one time, on printer power up, or following a network reset. *Format:* `! U1 setvar "ip.pop3.poll"` "value" *Values:* `"0"` through `"65535"` *Default:* `"0"`

Example • This `setvar` example shows the value set to `"0"`.

```
! U1 setvar "ip.pop3.poll" "0"
```

When the `setvar` value is set to `"0"`, the `getvar` result is `"0"`.

ip.pop3.server_addr

Description This printer setting refers to the POP3 server IP address that the printer contacts when checking for new mail. This only applies if "`ip.pop3.enable`" is set to on.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the POP3 server address. *Format:* `! U1 getvar "ip.pop3.server_addr"`
`setvar`	This command instructs the printer to change the POP3 server address. *Format:* `! U1 setvar "ip.pop3.server_addr"` "value" *Values:* Any valid POP3 server address *Default:* `"0.0.0.0"`

Example • This `setvar` example shows the value set to `"10.3.5.10"`.

```
! U1 setvar "ip.pop3.server_addr" "10.3.5.10"
```

When the `setvar` value is set to `"10.3.5.10"`, the `getvar` result is `"10.3.5.10"`.

ip.pop3.username

Description This printer setting refers to the POP3 user name. This only applies if the "ip.pop3.enable" is set to on.

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the POP3 user name. *Format:* ! U1 getvar "ip.pop3.username"
setvar	This command instructs the printer to change the POP3 user name. *Format:* ! U1 setvar "ip.pop3.username" "value" *Values:* A maximum of 20 alphanumeric characters *Default:* " "

Example • This setvar example shows the value set to "user".

```
! U1 setvar "ip.pop3.username" "user"
```

When the setvar value is set to "user", the getvar result is "user".

ip.port

Description This printer setting refers to the port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the TCP/UDP port number. *Format:* `! U1 getvar "ip.port"`
`setvar`	This command instructs the printer to set the TCP/UDP port number. *Format:* `! U1 setvar "ip.port"` "value" *Values:* 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515). *Default:* `"9100"`

Example • This `setvar` example shows the value set to `"9100"`.

```
! U1 setvar "ip.port" "9100"
```

When the `setvar` value is set to `"9100"`, the `getvar` result is `"9100"`.

ip.smtp.domain

Description This printer setting refers to the domain name used by the printer in sending email with respect to the SMTP server.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to return the SMTP domain name. *Format:* `! U1 getvar "ip.smtp.domain"`
`setvar`	This command instructs the printer to change the SMTP domain name. *Format:* `! U1 setvar "ip.smtp.domain"` "value" *Values:* A maximum of 24 alphanumeric characters *Default:* `"ZBRPrintServer"`

Example • This `setvar` example shows the value set to `"ZBRPrintServer.com"`.

```
! U1 setvar "ip.smtp.domain" "ZBRPrintServer.com"
```

When the `setvar` value is set to `"ZBRPrintServer.com"`, the `getvar` result is `"ZBRPrintServer.com"`.

ip.smtp.enable

Description This printer setting refers to the SMTP protocol.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to return the SMTP status. *Format:* `! U1 getvar "ip.smtp.enable"`
`setvar`	This command instructs the printer to turn SMTP on or off. *Format:* `! U1 setvar "ip.smtp.enable"` "value" *Values:* `"off" =` disables SMTP `"on" =` enables SMTP *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.smtp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.smtp.server_addr

Description This printer setting refers to the IP address of the SMTP server used for sending email.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current SMTP server address. *Format:* `! U1 getvar "ip.smtp.server_addr"`
`setvar`	This command instructs the printer to change the SMTP server address. *Format:* `! U1 setvar "ip.smtp.server_addr"` "value" *Values:* Any valid IP address. *Default:* `0.0.0.0`

Example • This `setvar` example shows the value set to `10.10.10.10`.

```
! U1 setvar "ip.smtp.server_addr" "10.10.10.10"
```

When the `setvar` value is set to `"10.10.10.10"`, the `getvar` result is `"10.10.10.10"`.

ip.snmp.enable

Description This printer setting refers to the SNMP protocol.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the SNMP status. *Format:* `! U1 getvar "ip.snmp.enable"`
`setvar`	This command instructs the printer to enable or disable the SNMP protocol. *Format:* `! U1 setvar "ip.snmp.enable" "value"` *Values:* `"on"` = enable the SNMP protocol `"off"` = disable the SNMP protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.snmp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.snmp.get_community_name

Description This printer setting is used when making SNMP queries. The SNMP client must supply the get community name that matches the printer's get community name in order to query any SNMP data.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to get the SNMP get community name string. *Format:* `! U1 getvar "ip.snmp.get_community_name"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the SNMP get community name string. *Format:* `! U1 setvar "ip.snmp.get_community_name" "`value`"` *Values:* A maximum of 19 alphanumeric characters. *Default:* `"public"`

Example • This `setvar` example shows the value set to `"public"`.

```
! U1 setvar "ip.snmp.get_community_name" "public"
```

When the `setvar` value is set to `"public"`, the `getvar` result is `"*"`.

ip.snmp.set_community_name

Description This printer setting is used when changing SNMP data remotely. To alter any SNMP data, the SNMP client must supply the set community name that matches the printer's set community name.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to return the printer's SNMP set community name string. *Format:* `! U1 getvar "ip.snmp.set_community_name"` For protection a single `"*"` returns.
`setvar`	This command instructs the printer to set the SNMP set community name string. *Format:* `! U1 setvar "ip.snmp.set_community_name" "value"` *Values:* A maximum of 19 alphanumeric characters *Default:* `"public"`

Example • This `setvar` example shows the value set to `"public"`.

```
! U1 setvar "ip.snmp.set_community_name" "public"
```

When the `setvar` value is set to `"public"`, the `getvar` result is `"*"`.

ip.tcp.enable

Description This printer setting refers to the TCP socket protocol.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the TCP status. *Format:* `! U1 getvar "ip.tcp.enable"`
`setvar`	This command instructs the printer to turn the TCP on or off. *Format:* `! U1 setvar "ip.tcp.enable"` "value" *Values:* `"off" =` disables TCP protocol `"on" =` enables TCP protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.tcp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.telnet.enable

Description This printer setting refers to the TELNET (port 23) protocol.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the TELNET status. *Format:* `! U1 getvar "ip.telnet.enable"`
`setvar`	This command instructs the printer to turn TELNET on or off. *Format:* `! U1 setvar "ip.telnet.enable"` "value" *Values:* `"off" =` disables telnet protocol `"on" =` enables telnet protocol *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.telnet.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

ip.udp.enable

Description This printer setting refers to the UDP socket protocol.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the UDP status. *Format:* `! U1 getvar "ip.udp.enable"`
`setvar`	This command instructs the printer to turn UDP on or off. *Format:* `! U1 setvar "ip.udp.enable"` "value" *Values:* `"off"` = disables UDP protocol `"on"` = enables UDP protocol *Default:* `"off"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "ip.udp.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

wlan.adhocautomode

Description This printer setting refers to enabling or disabling the adhoc auto mode.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the adhoc auto mode status. *Format:* `! U1 getvar "wlan.adhocautomode"`
`setvar`	This command instructs the printer to set the adhoc auto mode. *Format:* `! U1 setvar "wlan.adhocautomode" "value"` *Values:* `"on" =` adhoc auto mode enabled `"off" =` adhoc auto mode disabled *Default:* `"off"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "wlan.adhocautomode" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

wlan.adhocchannel

Description This printer setting refers to specifying the wireless channel for adhoc channel.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless channel for adhoc channel mode. *Format:* `! U1 getvar "wlan.adhocchannel"`
`setvar`	This command instructs the printer to set the wireless channel for adhoc channel mode. *Format:* `! U1 setvar "wlan.adhocchannel" "`value`"` *Values:* Decimal value between 1 and 16 inclusive *Default:* `"1"`

Example • This `setvar` example shows the value set to `"1"`.

```
! U1 setvar "wlan.adhocchannel" "1"
```

When the `setvar` value is set to `"1"`, the `getvar` result is `"1"`.

wlan.associated

Description This command refers to if the printer is or is not associated with an access point (AP).

Type `getvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with yes or no, which identifies if it is associated with the AP. *Format:* `! U1 getvar "wlan.associated"`

Example • In this example, the `getvar` result is `"yes"`.

```
! U1 getvar "wlan.associated"
```

wlan.channel_mask

Description This printer setting refers to specifying the wireless channel masks to enable and disable various channels.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless channel mask value. *Format:* `! U1 getvar "wlan.channel_mask"`
`setvar`	This command instructs the printer to set the wireless channel mask value. *Format:* `! U1 setvar "wlan.channel_mask" "`value`"` *Values:* 4 Hexadecimal digits preceded by "0x" (0x0000 to 0xFFFF). For commonly used channel masks, see Table 23 on page 163. *Default:* `"0x7FF"`

Table 23 • Channel Mask Settings

Region	Channel Mask
United States, Canada, Latin America	0x7FF
Europe, Middle East, Africa, other	0x1FFF
Japan	0x3FFF

Example • This `setvar` example shows the value set to `"0x7FF"`.

```
! U1 setvar "wlan.channel_mask" "0x7FF"
```

When the `setvar` value is set to `"0x7FF"`, the `getvar` result is `"0x7FF"`.

wlan.essid

Description This printer setting refers to the printer's stored ESSID. Setting the ESSID to "" will set the printer in a `"broadcast"` mode.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the stored ESSID value. *Format:* `! U1 getvar "wlan.essid"`
`setvar`	This command instructs the printer to change the ESSID. *Format:* `! U1 setvar "wlan.essid"` "value" *Values:* 32 character alphanumeric string *Default:* `"125"`

Example • This `setvar` example shows the value set to `"125"`.

```
! U1 setvar "wlan.essid" "125"
```

When the `setvar` value is set to `"125"`, the `getvar` result is `"125"`.

wlan.firmware_version

Description This command refers to the firmware version of the wireless radio card.

Type `getvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current version of the wireless radio card firmware. *Format:* `! U1 getvar "wlan.firmware_version"`

Example • In this example, the `getvar` result is the version of Symbol 4137 card (for example, `"F3.91-69"`).

```
! U1 getvar "wlan.firmware_version"
```

wlan.ip.addr

Description This command allows you to get or set the wireless print servers's IP address.

Type `getvar`; `setvar`

Important • For a set IP address to take affect, the IP protocol must be set to permanent and the print server must be reset.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with its current wireless print server IP address. *Format:* `! U1 getvar "wlan.ip.addr"`
`setvar`	This command instructs the printer to change its current wireless print server IP address upon powering the printer on. *Format:* `! U1 setvar "wlan.ip.addr"` "value" *Values:* any valid IP address *Default:* `"0.0.0.0"`

Note • The `setvar` value of this command can be affected by the `wlan.ip.dhcp.enable` command.

Example • This `setvar` example shows the value set to `"10.14.4.235"`.

```
! U1 setvar "wlan.ip.addr" "10.14.4.235"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"10.14.4.235"`.

wlan.ip.arp_interval

Description This print server setting allows you to specify the ARP (Address Resolution Protocol) interval or the ARP cache time out for the wireless print server.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the ARP interval or the ARP cache time out value (in seconds) for the wireless print server. *Format:* `! U1 getvar "wlan.ip.arp_interval"`
`setvar`	This command instructs the printer to respond with the ARP interval or the ARP cache time out value for the wireless print server. *Format:* `! U1 setvar "wlan.ip.arp_interval"` "value" *Values:* `0` to `30` seconds *Default:* `"0"`

Example • This `setvar` example shows the value set to `"0"`.

```
! U1 setvar "wlan.ip.arp_interval" "0"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"0"`.

wlan.ip.dhcp.cid_all

Description This printer setting defines the entire client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0", or "2". The MAC address is used if the type is set to "1".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix and suffix of the wireless print server. *Format:* ! U1 getvar "wlan.ip.dhcp.cid_all"
setvar	This command instructs the printer to change the client identifer prefix and suffix of the wireless print server. The prefix gets cleared and the suffix contains the entire client identifer. *Format:* ! U1 setvar "wlan.ip.dhcp.cid_all" "value" *Values:* A maximum length of 60 characters if the CID type is ASCII, or 120 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "printer".

```
! U1 setvar "wlan.ip.dhcp.cid_all" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

wlan.ip.dhcp.cid_enable

Description This command determines if DHCP (option 61) is turned on or off of the wireless print server.

Type `getvar; setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the status of the client identifier of the wireless print server. *`Format:`* `! U1 getvar "wlan.ip.dhcp.cid_enable"`
`setvar`	This command instructs the printer to set the status of the client identifier of the wireless print server. *Format:* `! U1 setvar "wlan.ip.dhcp.cid_enable" "value"` *Values:* `"off" =` client identifier is turned off `"on" =` client identifier is turned on *Default:* `"off"`

Example • This `setvar` example shows the value set to `"off"`.

```
! U1 setvar "wlan.ip.dhcp.cid_enable" "off"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"off"`.

wlan.ip.dhcp.cid_prefix

Description This printer setting defines the prefix to be prepended to the DHCP client identifier (option 61) when DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0" or "2".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier prefix of the wireless print server. *Format:* ! U1 getvar "wlan.ip.dhcp.cid_prefix"
setvar	This command instructs the printer to change the CID prefix of the wireless print server. *Format:* ! U1 setvar "wlan.ip.dhcp.cid_prefix" "value" *Values:* Any text string up to 10 characters if the CID type is ASCII, or 20 characters if the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "PRT001".

```
! U1 setvar "wlan.ip.dhcp.cid_prefix" "PRT001"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "PRT001".

wlan.ip.dhcp.cid_suffix

Description This printer setting defines the unique suffix to be used as the client identifier (DHCP option 61) if DHCP is enabled on the wireless print server and "wlan.ip.dhcp.cid_type" is set to "0" or "2".

Type getvar; setvar

This table identifies the commands for this format:

Commands	Details
getvar	This command instructs the printer to respond with the client identifier suffix on the wireless print server. *Format:* ! U1 getvar "wlan.ip.dhcp.cid_suffix"
setvar	This command instructs the printer to change the client identifier suffix value on the wireless print server. *Format:* ! U1 setvar "wlan.ip.dhcp.cid_suffix" "value" *Values:* The maximum length of a value allowed is 60 ASCII characters when the CID type is ASCII, or 120 hexadecimal values when the CID type is hexadecimal. *Default Value:* ""

Example • This setvar example shows the value set to "printer".

```
! U1 setvar "wlan.ip.dhcp.cid_suffix" "printer"
```

What the setvar value is set to is the getvar result. In this example, the getvar result is "printer".

wlan.ip.dhcp.cid_type

Description This printer setting defines the type of client identifier (DHCP option 61) that will be sent if DHCP is enabled on the wireless print server. A value of `"1"` means the type of "Ethernet" and the printer's MAC address will be used. A value of `"0"` or `"2"` means the client identifier sent will be `"wlan.ip.dhcp.cid_prefix"` concatenated with `"wlan.ip.dhcp.cid_suffix"`.

Type `getvar; setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the client identifier type for the wireless print server. *Format:* `! U1 getvar "wlan.ip.dhcp.cid_type"`
`setvar`	This command instructs the printer to enable "synthetic" client identifier for the wireless print server. *Format:* `! U1 setvar "wlan.ip.dhcp.cid_type" "value"` *Values:* `"0" =` ASCII string `"1" =` wireless radio card's MAC address `"2" =` HEX value *Default Value:* `"1"`

Example • This `setvar` example shows the value set to `"1"`.

```
! U1 setvar "wlan.ip.dhcp.cid_type" "1"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"1"`.

wlan.ip.gateway

Description This command instructs the printer to change the wireless print server's gateway address.

Type `getvar`; `setvar`

Note • This setting refers to the gateway address. A set value is ignored if the IP protocol is not set to permanent.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless printer server's gateway address. *Format:* `! U1 getvar "wlan.ip.gateway"`
`setvar`	This command instructs the printer to change the wireless printer server's gateway address. *Format:* `! U1 setvar "wlan.ip.gateway"` "value" *Values:* Any valid gateway address *Default:* `"0.0.0.0"`

Example • This `setvar` example shows the value set to `"10.3.5.1"`.

```
! U1 setvar "wlan.ip.gateway" "10.3.5.1"
```

When the `setvar` value is set to `"10.3.5.1"`, the `getvar` result is `"10.3.5.1"`.

wlan.ip.netmask

Description This setting refers to the wireless print server's subnet mask address. This value is ignored if the IP protocol is not set to permanent.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with wireless print server's subnet mask. *Format:* `! U1 getvar "wlan.ip.netmask"`
`setvar`	This command instructs the printer to change the wireless print servers's subnet mask. *Format:* `! U1 setvar "wlan.ip.netmask" "`value`"` *Values:* Any valid subnet mask. *Default:* `"255.255.255.0"`

Example • This `setvar` example shows the value set to `"255.255.255.0"`.

```
! U1 setvar "wlan.ip.netmask" "255.255.255.0"
```

When the `setvar` value is set to `"255.255.255.0"`, the `getvar` result is `"255.255.255.0"`.

wlan.ip.port

Description This printer setting refers to the wireless print server's port number that the TCP print service is listening on. Normal TCP communications from the host should be directed to this port.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless printer server's TCP/UDP port number. *Format:* `! U1 getvar "wlan.ip.port"`
`setvar`	This command instructs the printer to set the wireless print server's TCP/UDP port number. *Format:* `! U1 setvar "wlan.ip.port"` "value" *Values:* 1 - 65535 (excluding any ports currently used by other services, such as 21, 23, 80, and 515). *Default:* `"9100"`

Example • This `setvar` example shows the value set to `"9100"`.

```
! U1 setvar "wlan.ip.port" "9100"
```

When the `setvar` value is set to `"9100"`, the `getvar` result is `"9100"`.

wlan.ip.protocol

Description This command configures the IP addressing method used by the wireless print server.

Type `getvar; setvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command returns the value of the currently selected IP protocol used by the wireless print server. *Format:* `! U1 getvar "wlan.ip.protocol"`
`setvar`	This command instructs the printer to configure the IP addressing method used by the wireless print server. *Format:* `! U1 setvar "wlan.ip.protocol" "value"` *Values:* `"bootp" =` uses the standard bootp addressing method to obtain an IP address and configuration `"dhcp" =` uses the standard dhcp addressing method to obtain an IP address and configuration for a server specified period of time `"rarp" =` uses the standard rarp addressing method to obtain an IP address `"glean" =` uses the IP address from a PING packet that is sent to its hardware address (unicast address) `“permanent” =` uses static values assigned through other commands `"all" =` tries all of the dynamic addressing methods, not permanent, to obtain an IP address *Default:* `"all"`

Example • In this example, the `setvar` result is the current programming language that the printer is using.

```
! U1 setvar "wlan.ip.protocol" "bootp"
```

What the `setvar` value is set to is the `getvar` result. In this example, the `getvar` result is `"bootp"`.

wlan.ip.timeout.enable

Description This network setting refers to enabling the connection timeout on the wireless print server. For this to take effect, the print server must be reset.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to return whether the timeout checking is enabled on the wireless print server. *Format:* `! U1 getvar "wlan.ip.timeout.enable"`
`setvar`	This command instructs the printer to enable or disable the timeout checking on the wireless print server. *Format:* `! U1 setvar "wlan.ip.timeout.enable"` "value" *Values:* `"off"` = turns off the connection checking `"on"` = turns on the connection checking *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "wlan.ip.timeout.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

wlan.ip.timeout.value

Description This network setting refers to the number of seconds before the connection times out for the wireless print server. For this to take effect, the print server must be reset.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the time, in seconds, before the connection times out. *Format:* `! U1 getvar "wlan.ip.timeout.value"`
`setvar`	This command instructs the printer to set the the time value of the wireless print server, in seconds, before the connection times out. *Format:* `! U1 setvar "wlan.ip.timeout.value"` "value" *Values:* `"1"` through `"3600"` *Default:* `"300"`

Example • This `setvar` example shows the value set to `"300"`.

```
! U1 setvar "wlan.ip.timeout.value" "300"
```

When the `setvar` value is set to `"300"`, the `getvar` result is `"300"`.

wlan.keep_alive.enable

Description This setting controls the printers ability to send a LSAP (link service access point) packet to the access point on an user controllable interval. This feature is included to accommodate access points that require a regular confirmation that wireless clients are still active.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the `wlan.keep_alive.enable` setting. *Format:* `! U1 getvar "wlan.keep_alive.enable"`
`setvar`	This command instructs the printer to send a LSAP (link service access point) packet to the access point on an user controllable interval. *Format:* `! U1 setvar "wlan.keep_alive.enable" "value"` *Values:* `"on"` = turns on keep_alive `"off"` = turns off keep_alive *Default:* `"on"`

Example • This `setvar` example shows the value set to `"on"`.

```
! U1 setvar "wlan.keep_alive.enable" "on"
```

When the `setvar` value is set to `"on"`, the `getvar` result is `"on"`.

wlan.keep_alive.timeout

Description This printer setting manages the interval at which the LSAP (link service access point) packet is sent.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the `wlan.keep_alive.timeout` interval value. *Format:* `! U1 getvar "wlan.keep_alive.timeout"`
`setvar`	This command instructs the printer to configure the frequency at which the printer sends the `wlan.keep_alive packet`. *Format:* `! U1 setvar "wlan.keep_alive.timeout" "value"` *Values:* 5 to 300 seconds *Default:* `"15"`

Example • This `setvar` example shows the value set to `"15"`.

```
! U1 setvar "wlan.keep_alive.timeout" "15"
```

When the `setvar` value is set to `"15"`, the `getvar` result is `"15"`.

wlan.kerberos.kdc

Description This printer setting refers to the Kerberos Key Distribution Center (KDC). The KDC is a trusted server which maintains a database with account information for all security principals (users) for a particular site or administrative domain (realm).

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current Kerberos KDC. *Format:* `! U1 getvar "wlan.kerberos.kdc"`
`setvar`	This command instructs the printer to change the Kerberos KDC. *Format:* `! U1 setvar "wlan.kerberos.kdc" "value"` *Values:* 0-32 ASCII characters *Default:* `"krbtgt"`

Example • This `setvar` example shows the value set to `"krbtgt"`.

```
! U1 setvar "wlan.kerberos.kdc" "krbtgt"
```

When the `setvar` value is set to `"krbtgt"`, the `getvar` result is `"krbtgt"`.

wlan.kerberos.password

Description This printer setting refers to the Kerberos password. The password must correspond to a user profile established on the Kerberos KDC server in use.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current Kerberos password. *Format:* `! U1 getvar "wlan.kerberos.password"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the Kerberos password. *Format:* `! U1 setvar "wlan.kerberos.password"` "value" *Values:* 0-32 alphanumeric characters *Default:* `"password"`

Example • This `setvar` example shows the value set to `"password"`.

```
! U1 setvar "wlan.kerberos.password" "password"
```

When the `setvar` value is set to `"password"`, the `getvar` result is `"*"`.

wlan.kerberos.realm

Description This printer setting refers to the Kerberos realm, an administrative domain with its own Kerberos server (KDC).

Type `getvar`; `setvar`

Important • If you are using a Windows 2000 Server the realm must be all upper-case. For details, see the Windows 2000 Server example below.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current Kerberos realm. *Format:* `! U1 getvar "wlan.kerberos.realm"`
`setvar`	This command instructs the printer to change the Kerberos realm. *Format:* `! U1 setvar "wlan.kerberos.realm" "value"` *Values:* 0-64 alphanumeric characters *Default:* `"kerberos"`

Example • This `setvar` example shows the value set to `"zebra"`.

```
! U1 setvar "wlan.kerberos.realm" "zebra"
```

When the `setvar` value is set to `"zebra"`, the `getvar` result is `"zebra"`.

Example • This `setvar` example shows the value set to `"ZEBRA"` on a Windows 2000 server.

```
! U1 setvar "wlan.kerberos.realm" "ZEBRA"
```

When the `setvar` value is set to `"ZEBRA"`, the `getvar` result is `"ZEBRA"`.

wlan.kerberos.username

Description This printer setting refers to the Kerberos user name. The user name must correspond to a user profile established on the Kerberos KDC server in use.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current Kerberos user name. *Format:* `! U1 getvar "wlan.kerberos.username"`
`setvar`	This command instructs the printer to change the Kerberos user name. *Format:* `! U1 setvar "wlan.kerberos.username" "`value`"` *Values:* 0-32 alphanumeric characters *Default:* `"user"`

Example • This `setvar` example shows the value set to `"user"`.

```
! U1 setvar "wlan.kerberos.username" "user"
```

When the `setvar` value is set to `"user"`, the `getvar` result is `"user"`.

wlan.mac_addr

Description This command retrieves the MAC address of the wireless print server.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the MAC address of the wireless print server. *Format:* `! U1 getvar "wlan.mac_addr"`

Example • In this example, the `getvar` result is the MAC address for the wireless print server.

```
! U1 getvar "wlan.mac_addr"
```

wlan.operating_mode

Description This printer setting refers to the network operating mode. Infrastructure mode means that the printer will try to associate with an access point. Ad hoc mode means that the printer will try to associate with a device other than an access point and join a standalone network.

Type `getvar`; `setvar`

To use "ad hoc" mode configure the printer as follows:

- Set the ESSID to the new network's ESSID.
- Turn off the DHCP and assign an IP Address to the printer.
- Set the subnet mask on the printer to the new network's subnet mask.
- Change the operating mode on the printer to "ad hoc".

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the network-mode value. *Format:* `! U1 getvar "wlan.operating_mode"`
`setvar`	This command instructs the printer to set the network operating mode. *Format:* `! U1 setvar "wlan.operating_mode" "value"` *Values:* `"adhoc"` = printer will try to associate with a network device `"infrastructure"` = printer will try to associate with an access point *Default:* `"infrastructure"`

Example • This `setvar` example shows the value set to `"infrastructure"`.

```
! U1 setvar "wlan.operating_mode" "infrastructure"
```

When the `setvar` value is set to `"infrastructure"`, the `getvar` result is `"infrastructure"`.

wlan.password

Description This printer setting refers to the generic password that is used by the wireless securities that need a password.

Type `getvar`; `setvar`

Important • Kerberos has its own password field

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with a generic password for wireless securities. *Format:* `! U1 getvar "wlan.password"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set a generic password for the wireless securities that need a password. *Format:* `! U1 setvar "wlan.password"` "value" *Values:* A maximum of 32 alphanumeric characters. *Default:* `"password"`

Example • This `setvar` example shows the value set to `"password"`.

```
! U1 setvar "wlan.password" "password"
```

When the `setvar` value is set to `"password"`, the `getvar` result is `"*"`.

wlan.preamble

Description This printer setting selects the radio preamble length to be used.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current preamble length. *Format:* `! U1 getvar "wlan.preamble"`
`setvar`	This command instructs the printer to set the preamble length. *Format:* `! U1 setvar "wlan.preamble"` "value" *Values:* `"long"` = enables long preamble `"short"` = enables short preamble *Default:* `"long"`

Example • This `setvar` example shows the value set to `"long"`.

```
! U1 setvar "wlan.preamble" "long"
```

When the `setvar` value is set to `"long"`, the `getvar` result is `"long"`.

wlan.private_key_password

Description This printer setting allows the setting of the optional private key password.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the value of the private key password. *Format:* `! U1 getvar "wlan.private_key_password"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the private key password. *Format:* `! U1 setvar "wlan.private_key_password" "value"` *Values:* A maximum of 32 alphanumeric characters *Default:* `""`

Example • This `setvar` example shows the value set to `"password"`.

```
! U1 setvar "wlan.private_key_password" "password"
```

When the `setvar` value is set to `"password"`, the `getvar` result is `"*"`.

wlan.roam.interval

Description This printer setting refers to specifying the wireless roam interval.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the specified roam interval. *Format:* `! U1 getvar "wlan.roam.interval"`
`setvar`	This command instructs the printer to set the wireless roam interval. *Format:* `! U1 setvar "wlan.roam.interval"` "value" *Values:* Decimal values between 5 and 255 inclusive *Default:* `"20"`

Example • This `setvar` example shows the value set to `"20"`.

```
! U1 setvar "wlan.roam.interval" "20"
```

When the `setvar` value is set to `"20"`, the `getvar` result is `"20"`.

wlan.roam.signal

Description This printer setting refers to specifying the wireless roam signal.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the specified wireless roam signal. *Format:* `! U1 getvar "wlan.roam.signal"`
`setvar`	This command instructs the printer to set the wireless roam signal. *Format:* `! U1 setvar "wlan.roam.signal" "`value`"` *Values:* Decimal values between 1 and 75 inclusive. *Default:* `"50"`

Example • This `setvar` example shows the value set to `"50"`.

```
! U1 setvar "wlan.roam.signal" "50"
```

When the `setvar` value is set to `"50"`, the `getvar` result is `"50"`.

wlan.security

Description This printer setting allows you to specify both the wireless encryption type and authentication type in one command.

Note • The supporting parameters that are required vary based on the security type that you select. See *Supporting SGD Commands for Different Security Types* on page 194 for instructions for each security type.

Type `getvar`; `setvar`

Note • When using certificate files, Zebra printers support:

- using Privacy Enhanced Mail (PEM) formatted certificate files.
- using the client certificate and private key as two files, each downloaded separately.
- using exportable PAC files for EAP-FAST.

These certificate files can only be sent using ZPL, not SGD. The ZPL command to use when sending these certificate files is the `~DY` command.

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to return the name and not the type. If an invalid security mode is entered the printer returns Invalid Mode. *Format:* `! U1 getvar "wlan.security" "value"`

`setvar`	This command instructs the printer to set the wireless security value.
	Format: `! U1 setvar "wlan.security"` "value"
	Values:
	`"1"` = No wireless security or `"none"`
	`"2"` = WEP 40-bit or `"wep 40-bit"`
	`"3"` = WEP 128-bit or `"wep 128-bit"`
	`"4"` = EAP-TLS or `"eap-tls"`
	`"5"` = EAP-TTLS or `"eap-ttls"`
	`"6"` = EAP-FAST or `"eap-fast"`
	`"7"` = PEAP or `"peap"`
	`"8"` = LEAP or `"leap"`
	`"9"` = WPA PSK or `"wpa psk"` (Key rotation for WPA2 PSK is supported in firmware versions V53.15.8Z , X60.15.8Z, and later.)
	`"10"` = WPA EAP-TLS or `"wpa eap-tls"`
	`"11"` = WPA EAP-TTLS or `"wpa eap-ttls"`
	`"12"` = WPA EAP-FAST or `"wpa eap-fast"`
	`"13"` = WPA PEAP or `"wpa peap"`
	`"14"` = WPA LEAP or `"wpa leap"`
	`"15"` = Kerberos or `"kerberos"`
	Default: `"1"`

Example • This `setvar` example shows the value set to `"1"`.

```
! U1 setvar "wlan.security" "1"
```

When the `setvar` value is set to `"1"`, the `getvar` result is `"none"`.

Supporting SGD Commands for Different Security Types

The supporting SGD commands required for `wlan.security` vary based on the security type that you select. You must send the additional commands for your printer to be able to work on your wireless network. Follow the example and format for your specific security type in this section, substituting your own wireless network data.

Security Type 1: No Wireless Security Active

Additional parameters that need to be set: none

Example • This example turns off all wireless securities controlled under this command, but it does not reset the printer's wireless settings to their defaults. To reset all wireless settings, see *Restore Network Parameters to Defaults* on page 55.

```
! U1 setvar "wlan.security" "1"
```

Security Type 2: WEP 40-Bit

Additional parameters that need to be set and the SGD commands to use:

- WEP encryption index (see *wlan.wep.index* on page 209)
- WEP authentication type (see *wlan.wep.auth_type* on page 208)
- WEP key type (see *wlan.wep.key_format* on page 214)
- the actual values of any WEP encryption keys to be used (see *wlan.wep.key1* on page 210, *wlan.wep.key2* on page 211, *wlan.wep.key3* on page 212, or *wlan.wep.key4* on page 213)

Example • This example configures the printer for WEP 40-bit encryption using index key 1, open authentication, and a hexadecimal WEP key with a value of "`A1B2C3D4F5`."

```
! U1 setvar "wlan.security" "2"
! U1 setvar "wlan.wep.index" "1"
! U1 setvar "wlan.wep.auth_type" "open"
! U1 setvar "wlan.wep.key_format" "hex"
! U1 setvar "wlan.wep.key1" "A1B2C3D4F5"
```

Security Type 3: WEP 128-Bit

Additional parameters that need to be set and the SGD commands to use:

- WEP encryption index (see *wlan.wep.index* on page 209)
- WEP authentication type (see *wlan.wep.auth_type* on page 208)
- WEP key type (see *wlan.wep.key_format* on page 214)
- the actual values of any WEP encryption keys to be used (see *wlan.wep.key1* on page 210, *wlan.wep.key2* on page 211, *wlan.wep.key3* on page 212, or *wlan.wep.key4* on page 213)

Example • This example configures the printer for WEP 128-bit encryption using index key 2, open authentication, and four hexadecimal WEP keys.

```
! U1 setvar "wlan.security" "3"
! U1 setvar "wlan.wep.index" "2"
! U1 setvar "wlan.wep.auth_type" "open"
! U1 setvar "wlan.wep.key_format" "hex"
! U1 setvar "wlan.wep.key1" "001122334455667788"
! U1 setvar "wlan.wep.key2" "112233445566778899"
! U1 setvar "wlan.wep.key3" "223344556677889900"
! U1 setvar "wlan.wep.key4" "3344556677889900 11"
```

Security Type 4: EAP-TLS

Additional parameters that need to be set and the SGD commands to use:

- optional private key password (see *wlan.private_key_password* on page 189)

Example • This example configures the printer for EAP-TLS authentication with an optional private key password with a value of "`private`."

```
! U1 setvar "wlan.security" "4"
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 5: EAP-TTLS

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for EAP-TTLS authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "5"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 6: EAP-FAST

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)
- optional private key password (see *wlan.private_key_password* on page 189)

Example • This example configures the printer for EAP-FAST authentication, including a user ID of "`user`," a password of "`password`," and an optional private key of "`private`."

```
! U1 setvar "wlan.security" "6"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 7: PEAP

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for PEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "7"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 8: LEAP

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for LEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "8"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 9: WPA PSK

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments. Key rotation for WPA2 PSK is supported in firmware version V60.15.7Z, V53.15.7Z, R6x15.x, R53.15.x, ZSPx, and later.

Additional parameters that need to be set and the SGD commands to use:

- Pre-Shared Key (PSK) value (see *wlan.wpa.psk* on page 215)

Example • This example configures the printer for WPA PSK authentication with a PSK value of all zeroes (64 hexadecimal digits).

```
! U1 setvar "wlan.security" "9"
! U1 setvar "wlan.wpa.psk" "00000000..."
```

Security Type 10: WPA EAP-TLS

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- optional private key password (see *wlan.private_key_password* on page 189)

Example • This example configures the printer for WPA EAP-TLS authentication with an optional private key password with a value of "`private`."

```
! U1 setvar "wlan.security" "10"
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 11: WPA EAP-TTLS

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for WPA EAP-TTLS authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "11"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 12: WPA EAP-FAST

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)
- optional private key password (see *wlan.private_key_password* on page 189)

Example • This example configures the printer for WPA EAP-FAST authentication, including a user ID of "`user`," a password of "`password`," and an optional private key of "`private`."

```
! U1 setvar "wlan.security" "12"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
! U1 setvar "wlan.private_key_password" "private"
```

Security Type 13: WPA PEAP

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for WPA PEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "13"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 14: WPA LEAP

Note • Configuring the printer for WPA also allows the printer to be used in WPA2 environments.

Additional parameters that need to be set and the SGD commands to use:

- user ID (see *wlan.username* on page 207)
- password (see *wlan.password* on page 187)

Example • This example configures the printer for WPA LEAP authentication, including a user ID with a value of "`user`" and a password with a value of "`password`."

```
! U1 setvar "wlan.security" "14"
! U1 setvar "wlan.username" "user"
! U1 setvar "wlan.password" "password"
```

Security Type 15: Kerberos

Additional parameters that need to be set and the SGD commands to use:

- Kerberos user ID (see *wlan.kerberos.username* on page 184)
- Kerberos password (see *wlan.kerberos.password* on page 182)
- realm (see *wlan.kerberos.realm* on page 183)
- Key Distribution Center (KDC) (see *wlan.kerberos.kdc* on page 181)

Example • This example configures the printer for Kerberos encryption, including a Kerberos user ID with a value of "`user`," a Kerberos password with a value of "`password`," a realm of "`zebra`," and a KDC of "`krbtgt`."

```
! U1 setvar "wlan.security" "15"
! U1 setvar "wlan.kerberos.username" "user"
! U1 setvar "wlan.kerberos.password" "password"
! U1 setvar "wlan.kerberos.realm" "zebra"
! U1 setvar "wlan.kerberos.kdc" "krbtgt"
```

wlan.signal_noise

Description This command returns the signal noise on the wireless network. Values above 40% represent a very significant noise, and radio communication is not reliable.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to return the current signal noise on the wireless network. *Format:* `! U1 getvar "wlan.signal_noise"`

Example • In this example, the getvar result is the current signal_noise value.

```
! U1 getvar "wlan.signal_noise"
```

wlan.signal_quality

Description This command instructs the printer to return the current signal quality of the wireless network. Values below 40% represent a very poor signal quality, and radio communication is not reliable.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to return the current signal quality of the wireless network. *Format:* `! U1 getvar "wlan.signal_quality"`

Example • In this example, the getvar result is the current signal_quality value.

```
! U1 getvar "wlan.signal_quality"
```

wlan.signal_strength

Description This command returns the signal strength of the connection to the access point as a percentage value between zero (not connected) and 100 (strongest signal). Values below 40% represent a very poor signal and radio communication is not reliable.

Type `getvar`

This table identifies the command for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the current signal strength. *Format:* `! U1 getvar "wlan.signal_strength"`

Example • In this example, the getvar result is `"93"`.

```
! U1 getvar "wlan.signal_strength"
```

wlan.station_name

Description This printer setting refers to the station name.

Type `setvar;getvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the station name value. *Format:* `! U1 getvar "wlan.station_name"`
`setvar`	This command instructs the printer to set the station name. *Format:* `! U1 setvar "wlan.station_name" "`value`"` *Values:* A maximum of 32 alphanumeric characters *Default:* `"ZEBRA"`

Example • This `setvar` example shows the value set to `"ZEBRA"`.

```
! U1 setvar "wlan.station_name" "ZEBRA"
```

When the `setvar` value is set to `"ZEBRA"`, the `getvar` result is `"ZEBRA"`.

wlan.tx_power

Description This printer setting refers to specifying the wireless transmit power.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless transmit power. *Format:* `! U1 getvar "wlan.tx_power"`
`setvar`	This command instructs the printer to set the wireless transmit power. *Format:* `! U1 setvar "wlan.tx_power"` "value" *Values:* Decimal values of 1, 5, 20, 30, 50, 100 *Default:* `"100"`

Example • This `setvar` example shows the value set to `"100"`.

```
! U1 setvar "wlan.tx_power" "100"
```

When the `setvar` value is set to `"100"`, the `getvar` result is `"100"`.

wlan.tx_rate

Description This printer setting refers to specifying the wireless transmit rate.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the wireless transmit rate. *Format:* `! U1 getvar "wlan.tx_rate"`
`setvar`	This command instructs the printer to set the wireless transmit rate. *Format:* `! U1 setvar "wlan.tx_rate"` "value" *Values:* 1, 2, 5.5, 11, all *Default:* `"all"`

Example • This `setvar` example shows the value set to `"all"`.

```
! U1 setvar "wlan.tx_rate" "all"
```

When the `setvar` value is set to `"all"`, the `getvar` result is `"all"`.

wlan.username

Description This printer setting refers to the generic user name that is used by the wireless securities that need a user name.

Type `getvar`; `setvar`

Important • Kerberos has its own user name field.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with a generic user name for the wireless securities that need a user name. *Format:* `! U1 getvar "wlan.username"`
`setvar`	This command instructs the printer to set a generic user name for wireless securities that need a user name. *Format:* `! U1 setvar "wlan.username" "`value`"` *Values:* A maximum of 32 alphanumeric characters *Default:* `"user"`

Example • This `setvar` example shows the value set to `"user"`.

```
! U1 setvar "wlan.username" "user"
```

When the `setvar` value is set to `"user"`, the `getvar` result is `"user"`.

wlan.wep.auth_type

Description For the WEP security type, this printer setting selects the authentication type to be used between the printer and the access point. The authentication types are open system and shared key.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to retrieve the current WEP authentication type. *Format:* `! U1 getvar "wlan.wep.auth_type"`
`setvar`	This command instructs the printer to set the WEP authentication type. *Format:* `! U1 setvar "wlan.wep.auth_type"` "value" *Values:* `"open"` = enables the open authentication type `"shared"` = enables the shared authentication type *Default:* `"open"`

Example • This `setvar` example shows the value set to `"open"`.

```
! U1 setvar "wlan.wep.auth_type" "open"
```

When the `setvar` value is set to `"open"`, the `getvar` result is `"open"`.

wlan.wep.index

Description This printer setting refers to the WEP (Wired Equivalent Privacy) encryption key index. This printer setting determines which one of the four encryption keys is to be used by the client (printer).

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the encryption key index. *Format:* `! U1 getvar "wlan.wep.index"`
`setvar`	This command instructs the printer to set the encryption key index. *Format:* `! U1 setvar "wlan.wep.index" "value"` *Values:* `"1"` = enables encryption key 1 `"2"` = enables encryption key 2 `"3"` = enables encryption key 3 `"4"` = enables encryption key 4 *Default:* `"1"`

Example • This `setvar` example shows the value set to `"1"`.

```
! U1 setvar "wlan.wep.index" "1"
```

When the `setvar` value is set to `"1"`, the `getvar` result is `"1"`.

wlan.wep.key1

Description This printer setting refers to the first indexed WEP encryption key. The WEP encryption key is a hexadecimal or string value. This key should match the wireless network WEP encryption key 1.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the encryption key. *Format:* `! U1 getvar "wlan.wep.key1"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the encryption key. *Format:* `! U1 setvar "wlan.wep.key1"` "value" *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This `setvar` example shows the value set to `"A1B2C3D4F5"`.

```
! U1 setvar "wlan.wep.key1" "A1B2C3D4F5"
```

When the `setvar` value is set to `"A1B2C3D4F5"`, the `getvar` result is `"*"`.

wlan.wep.key2

Description This printer setting refers to the second indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 2.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer respond with the encryption key. *Format:* `! U1 getvar "wlan.wep.key2"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the encryption key. *Format:* `! U1 setvar "wlan.wep.key2"` "value" *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This `setvar` example shows the value set to `"A1B2C3D4F5"`.

```
! U1 setvar "wlan.wep.key2" "A1B2C3D4F5"
```

When the `setvar` value is set to `"A1B2C3D4F5"`, the `getvar` result is `"*"`.

wlan.wep.key3

Description This printer setting refers to the third indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 3.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the encryption key. *Format:* `! U1 getvar "wlan.wep.key3"` *Format:* For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the encryption key. *Format:* `! U1 setvar "wlan.wep.key3"` "value" *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This `setvar` example shows the value set to `"A1B2C3D4F5"`.

```
! U1 setvar "wlan.wep.key3" "A1B2C3D4F5"
```

When the `setvar` value is set to `"A1B2C3D4F5"`, the `getvar` result is `"*"`.

wlan.wep.key4

Description This printer setting refers to the fourth indexed WEP encryption key. The WEP encryption key is a hexadecimal string value. This key should match the wireless network WEP encryption key 4.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer respond with the encryption key. *Format:* `! U1 getvar "wlan.wep.key4"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the encryption key. *Format:* `! U1 setvar "wlan.wep.key4"` "value" *Values:* 10 hexadecimal characters for 40-bit encryption 26 hexadecimal characters for 128-bit encryption *Default:* All zeros

Example • This `setvar` example shows the value set to `"A1B2C3D4F5"`.

```
! U1 setvar "wlan.wep.key4" "A1B2C3D4F5"
```

When the `setvar` value is set to `"A1B2C3D4F5"`, the `getvar` result is `"*"`.

wlan.wep.key_format

Description This printer setting specifies the format for the WEP key.

Type `getvar`; `setvar`

Important • This printer setting should proceed any of the `wep.key` settings if you select a non-default value.

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the WEP key format. *Format:* `! U1 getvar "wep.key_format"`
`setvar`	This command instructs the printer to set the WEP key format. *Format:* `! U1 setvar "wlan.wep.key_format" "`value`"` *Values:* `"ascii" =` WEP key is set by ASCII string `"hex" =` WEP key is a Hex string *Default:* `"hex"`

Example • This `setvar` example shows the value set to `"ascii"`.

```
! U1 setvar "wlan.wep.key_format" "ascii"
```

When the `setvar` value is set to `"ascii"`, the `getvar` result is `"ascii"`.

wlan.wpa.psk

Description This printer setting specifies the pre-shared key (PSK) value to use when the WPA authentication is set to PSK. This value is calculated and must be the same for each device on the WLAN. Use ZebraNet Bridge to generate the PSK value.

Type `getvar`; `setvar`

This table identifies the commands for this format:

Commands	Details
`getvar`	This command instructs the printer to respond with the pre-shared key. *Format:* `! U1 getvar "wlan.wpa.psk"` For protection a single `"*"` prints.
`setvar`	This command instructs the printer to set the pre-shared key. *Format:* `! U1 setvar "wlan.wpa.psk"` "value" *Values:* 64 hexadecimal digits *Default:* `64 zeros (00000000...)`

Example • This `setvar` example shows the value set to `"00000000..."`.

```
! U1 setvar "wlan.wpa.psk" "00000000..."
```

When the `setvar` value is set to `"00000000..."`, the `getvar` result is `"*"`.

Notes •

Glossary

alphanumeric Indicating letters, numerals, and characters such as punctuation marks.

backfeed When the printer pulls the media and ribbon (if used) backward into the printer so that the beginning of the label to be printed is properly positioned behind the printhead. Backfeed occurs when operating the printer in Tear-Off and Applicator modes.

bar code A code by which alphanumeric characters can be represented by a series of adjacent stripes of different widths. Many different code schemes exist, such as the universal product code (UPC) or Code 39.

black mark A registration mark found on the underside of the print media that acts as a start-of-label indication for the printer. (See *non-continuous media*.)

calibration (of a printer) A process in which the printer determines some basic information needed to print accurately with a particular media and ribbon combination. To do this, the printer feeds some media and ribbon (if used) through the printer and senses whether to use the direct thermal or thermal transfer print method, and (if using non-continuous media) the length of individual labels or tags.

character set The set of all letters, numerals, punctuation marks, and other characters that can be expressed by a particular font or bar code.

character shaping Characters assume different glyphic forms depending on the context.They can be used with a script-based language.

check digit A character added to a bar code symbol that indicates to the scanner that it has read the symbol correctly.

configuration The printer configuration is a group of operating parameters specific to the printer application. Some parameters are user selectable, while others are dependent on the installed options and mode of operation. Parameters may be switch selectable, control panel programmable, or downloaded as ZPL II commands. A configuration label listing all the current printer parameters may be printed for reference.

diagnostics Information about which printer functions are not working that is used for troubleshooting printer problems.

direct thermal A printing method in which the printhead presses directly against the media. Heating the printhead elements causes a discoloration of the heat-sensitive coating on the media. By selectively heating the printhead elements as the media moves past, an image is printed onto the media. No ribbon is used with this printing method. Contrast this with *thermal transfer*.

dynamic RAM The memory devices used to store the label formats in electronic form while they are being printed. The amount of DRAM memory available in the printer determines the maximum size and number of label formats that can be printed. This is volatile memory that loses the stored information when power is turned off.

Extensible Authentication Protocol over Flexible Authentication via Secure Tunneling (EAP-FAST) Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) is a publicly accessible IEEE 802.1X EAP type developed by Cisco Systems. It is available as an IETF informational draft. Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) is a publicly accessible IEEE 802.1X EAP type developed by Cisco Systems. It is available as an IETF informational draft. Cisco developed EAP-FAST to support customers who cannot enforce a strong password policy and wish to deploy an 802.1X EAP type that does not require digital certificates, supports a variety of user and password database types, supports password expiration and change, and is flexible, easy to deploy, and easy to manage. For example, a customer using Cisco LEAP who cannot enforce a strong password policy and does not want to use certificates can migrate to EAP-FAST for protection from dictionary attacks.

Extensible Authentication Protocol over Transport Layer Security (EAP-TLS) Second generation Wi-Fi security. Current Wi-Fi security standards (802.1x) define the use of the TLS protocol encapsulated within the Extensible Authentication Protocol (EAP) as one of the strongest security mechanisms for Wi-Fi. Using EAP-TLS provides well-regarded, standards-based security between an access point and a Wi-Fi client. This is a Microsoft standard.

- A form of 802.1X (EAP) authentication
- Uses client and server certificates for mutual authentication (PKI)
- TLS 1.0 (Transport Layer Security) is based on Secure Socket Layer (SSL) 3.0

Extensible Authentication Protocol over Tunneled Transport Layer Security (EAP-TTLS) EAP-TTLS is an extension of EAP-TLS which provides for certificate-based, mutual authentication of the client and network. Unlike EAP-TLS, however, EAP-TTLS requires only server-side certificates, eliminating the need to configure certificates for each WLAN client. In addition, it supports legacy password protocols, so you can deploy it against your existing authentication system (such as tokens or Active Directories.) It securely tunnels client authentication within TLS records, ensuring that the user remains anonymous to eavesdroppers on the wireless link and the entire network to the RADIUS server.

firmware This is the term used to specify the printer's operating program. This program is downloaded to the printer from a host computer and stored in FLASH memory. Each time the printer power is turned on, this operating program starts. This program controls when to feed the media forward or backward and when to print a dot on the label stock.

FLASH memory FLASH memory is non-volatile and maintains the stored information intact when power is off. This memory area is used to store the printer's operating program. In addition, this memory can be used to store optional printer fonts, graphic formats, and complete label formats.

Font A complete set of alphanumeric characters in one style of type. Examples include CG Times™, CG Triumvirate Bold Condensed™.

ips (inches-per-second) The speed at which the label or tag is printed. Zebra printers can print from 1 ips to 12 ips.

Kerberos Network authentication protocol that uses the concept of a time-limited "ticket" for access to network resources. Kerberos uses key distribution and client/server authentication.

light emitting diode (LED) Indicators of specific printer status conditions. Each LED is either off, on, or blinking depending on the feature being monitored.

Lightweight Extensible Authentication Protocol (LEAP or Lightweight EAP) A non-standard Wireless Security protocol from Cisco. LEAP uses mutual authentication, meaning that both the user and the access point must be authenticated before access to the LAN is allowed. Mutual authentication can help protect wireless networks from rogue access points, man-in-the-middle attacks, sniffing attacks, and active attacks. Based on 802.1X EAP protocol.

liquid crystal display (LCD) The LCD is a back-lit display that provides the user with either operating status during normal operation or option menus when configuring the printer to a specific application.

lock-up This is the term generally used to describe a fault condition that, for no apparent reason, causes the printer to stop working.

media Material onto which data is printed by the printer. Types of media include: tag stock, die-cut labels, continuous labels (with and without media liner), non-continuous media, fanfold media, and roll media.

media sensor This sensor is located behind the printhead to detect the presence of media and, for non-continuous media, the position of the web, hole, or notch used to indicate the start of each label.

non-continuous media Media that contains an indication of where one label/printed format ends and the next one begins. Examples are die-cut labels, notched tag-stock, and stock with black mark registration marks.

non-volatile memory Electronic memory that retains data even when the power to the printer is turned off.

Protected Extensible Authentication Protocol (PEAP) A draft standard for a common approach to wireless-network user authentication.

- A form of 802.1X authentication
- Currently an IETF draft (still subject to change)

- Performs mutual client/server authentication using transport layer security (TLS), but only requires a server certificate
- With no client certificate, configuration is easier than EAP-TLS

peel-off A mode of operation in which the printer peels a printed label away from the backing and allows the user to remove it before another label is printed. Printing pauses until the label is removed.

print speed The speed at which printing occurs. For thermal transfer printers, this speed is expressed in terms of ips (inches per second).

printhead wear The degradation of the surface of the printhead and/or the print elements over time. Heat and abrasion can cause printhead wear. Therefore, to maximize the life of the printhead, use the lowest print darkness setting (sometimes called burn temperature or head temperature) and the lowest printhead pressure necessary to produce good print quality. In the thermal transfer printing method, use ribbon that is as wide or wider than the media to protect the printhead from the rough media surface.

registration Alignment of printing with respect to the top (vertical) or sides (horizontal) of a label or tag.

symbology The term generally used when referring to a bar code.

tear-off A mode of operation in which the user tears the label or tag stock away from the remaining media by hand.

thermal transfer A printing method in which the printhead presses an ink or resin coated ribbon against the media. Heating the printhead elements causes the ink or resin to transfer onto the media. By selectively heating the printhead elements as the media and ribbon move past, an image is printed onto the media. Contrast this with *direct thermal*.

Wi-Fi Protected Access (WPA) WPA is a security protocol for wireless local area networks (WLANs) that includes encryption and user authentication.

Wireless Encryption Protocol (WEP) WEP is a security protocol for wireless local area networks (WLANs) that secures data transmissions using 64-bit or 128-bit encryption.

Index

A

access point
  as part of a WLAN, 19
  associated, 162
  selection, 19
  troubleshooting problems, 59
accessing printer home page, 64
active print server
  IP address and network configuration label, 25
  selecting primary network device, 26
  view on ZM and RZ printers, 50
adaptor for Compact Flash card, 40
adhoc auto mode, 160
adhoc channel, 161
alert setup, 81
antenna parameter setting via ZPL, 103
ARP
  setting using wlan.ip.arp_interval, 167
  setting via ip.arp_interval, 132
authentication
  setting type via wlan.wep.auth_type, 208
  timeout for printer home page, 102
  troubleshooting, 60

B

bootp
  enable or disable via control panel, 48
  enable or disable via ip.bootp.enable, 133

C

card.inserted, 129
card.mac_addr, 130
channel mask
  setting via wlan.channel_mask, 163
  setting via ^WS, 113
client identifier (CID), 94
command structure, 128
Compact Flash card insertion, 40
configuration
  Network Setup Wizard, 31
  options, 30
  using ZPL commands, 93
  wireless securities, 115
connecting to a wireless network, 19
contacts, 11
control panel
  view wireless status, 44
  wireless print server parameters, 48
customer service, 11

D

default gateway
  view on other printers, 49
  view or change on S4M, 54
  view or change on ZM and RZ printers, 51
device type, 78
DHCP
  CID prefix, 136, 170
  Client Identifier, 168
  enable, 135, 169
do command, 127
download firmware, 16

E

e-mail alert messaging, 82
encryption
  set LEAP parameters, 108
  set values via ZPL, 104
  troubleshooting, 60
  Wireless Encryption Setup screen, 76
ESSID
  set via wlan.essid, 164
  setting via ^WS, 113
  view on other printers, 49
  view on the S4M, 54
  view on ZM and RZ printers, 51

F

firmware
  connection problems after upgrade, 59
  S4M, 53
  V60.15.x, R6x.15.x, and ZSPx parameters, 48
  version required in printer, 16
  versions required in wireless radio cards, 20
  view firmware version of wireless radio card, 165
  ZM and RZ parameters, 50
flash memory, 78
FTP protocol setting, 140

G

getvar command, 126

H

hardware requirements, 16
home page, 64

I

inserting wireless radio card
  Compact Flash and adaptor, 40
  standard, 38
interaction between wired and wireless, 25
internal_wired.ip.port, 175
international mode
  setting via ^WS, 113
IP address
  192.168.254.254 showing, 61
  all zeroes (000.000.000.000), 61
  for wired and wireless print servers, 25
  POP3 server, 148
  printer, 166
  select method for obtaining
    other printers, 49
    S4M, 53
    ZM and RZ printers, 50
  setting via ip.addr, 131
  troubleshooting issues, 61
  view on other printers, 49
  view or modify on the S4M, 53
  view or modify on ZM or RZ printers, 51
ip.arp_interval, 132
ip.bootp.enable, 133
ip.dhcp.cid_all, 134
ip.dhcp.cid_enable, 135
ip.dhcp.cid_prefix, 136
ip.dhcp.cid_suffix, 137
ip.dhcp.cid_type, 138
ip.dhcp.enable, 139
ip.ftp.enable, 140
ip.gateway, 141
ip.http.enable, 142
ip.lpd.enable, 143
ip.netmask, 144
ip.pop3.enable, 145
ip.pop3.password, 146
ip.pop3.poll, 147
ip.pop3.server_addr, 148
ip.pop3.username, 149
ip.port, 150
ip.smtp.domain, 151
ip.smtp.enable, 152
ip.smtp.server_addr, 153
ip.snmp.get_community_name, 155
ip.snmp.server_addr, 154
ip.snmp.set_community_name, 156
ip.tcp.enable, 157
ip.telnet.enable, 158
ip.udp.enable, 159

K

^KC, set client identifier (CID), 94
Kerberos
  view or change password, 182
  wireless cards that support Kerberos, 22
key rotation, 115
  firmware version required, 121, 197

L

LEAP mode
  setting using ZPL, 108
liability, 2
Line Printer Daemon (LPD) protocol setting, 143
link status indicator, 44
LIST NETWORK option, 46

M

MAC address
  retrieve via card.mac_addr, 130
  retrieve via wlan.mac_addr, 185
  view on other printers, 49
  view on the S4M, 54
  view on ZM and RZ printers, 51
memory locations, 78

N

^NB, network boot, 95
network boot command, 95
network configuration label
  HC100 printer configuration wristband, 47
  print through control panel, 46
  print via ZPL, 109
network configuration screens, 72
network operating mode, 186
network settings
  change via control panel, 48
  setting via ZPL, 106
Network Setup Wizard, 31
^NN, set SNMP parameters, 99
NO CARD INSERTED message, 58
noise level
  indicator, 45
  view via wlan.signal.noise, 201
NOT ASSOCIATED message, 58
NOT AUTHENTICATD message, 58
^NP, set primary/secondary device, 100
^NT, set SMTP, 101
^NW, set web authentication timeout value, 102

O

onboard flash, 78
option 61
  CID prefix, 136, 170
  enable, 135, 169

P

parallel port to configure wireless print server, 30
pass phrase, 34
password
  affect of wireless password on control panel parameters, 48, 50
  private key password, 189
  set wireless password via wlan.password, 187
  set wireless password via ^WP, 110
poor signal setting, 58
POP3
  change poll interval, 147
  enable mailbox, 145
  IP address, 148
  mailbox password, 146
  user name, 149
pre-shared key (PSK) value, 215
primary network device
  preference for active print server, 26
  select for ZM and RZ printers, 50
  selection by ^NC, 96
primary/secondary device
  setting via web pages, 73
  setting via ZPL, 100
print network configuration label
  through control panel, 46
  via ZPL command, 109
PRINT OUT NETWORK option, 46
printer compatibility, 17
printer home page, 64
printer IP address, 166
printer memory, 78
printer web pages
  RFID setup, 69
private key password, 189

R

RADIO WARNING POOR SIGNAL message, 58
RESET NETWORK option
  other printers, 49
  S4M, 54
  ZM and RZ printers, 52
reset wireless radio card and print server, 112
restore network to defaults
  options for restoring, 55
  reconfiguring using Network Setup Wizard, 31
RFID setup web page, 69
roam interval, 190
roam signal, 191

S

sales, 11
security type
  setting via wlan.security, 192
  setting via ^WX, 115
  view on other printers, 49
  view on the S4M, 54
  view on ZM and RZ printers, 51
  which wireless radio cards can be used with each, 22
serial communication setup web page, 68
setvar command, 126
SGD command structure, 128
signal strength and quality
  indicators, 45
  view via wlan.signal_quality, 202
  view via wlan.signal_strength, 203
SMTP parameters
  enable SMTP, 152
  setting via web pages, 74
  setting via ZPL, 101
  specify SMTP domain name, 151
SMTP paramters
  specify IP address of SMTP server, 153
SNMP parameters
  ip.snmp.get_community_name, 155
  setting via web pages, 73
  setting via ZPL, 99
SNMP paramters
  enable SNMP protocol, 154
station name, 204
subnet mask
  change, 144, 174
  view on other printers, 49
  view or modify on the S4M, 53
  view or modify on ZM and RZ printers, 51
supported printers, 17
supported wireless radio cards, 20

T

TCP communication, 150, 175
TCP socket protocol, 157
TCP/IP setting via web pages, 74, 75
technical support, 11
TELNET protocol, 158
timeout
  enable, 177
  value, 178
timeout value for printer home page, 102
transmit power, 205
transmit rate
  setting via wlan.tx_rate, 206
  setting via ^WR, 111
troubleshooting
  connection problems after firmware upgrade, 59
  encryption and authentication issues, 60
  general issues, 58
  inconsistent wireless connection, 59
  IP issues, 61
  not connecting, 58
  system disabled after encryption set, 60
  WEP key field not large enough, 60
  wireless radio card not acknowledged, 58

U

UDP socket protocol, 159
USB port to configure wireless print server, 30

V

view printer configuration via web pages, 66
view wireless status through control panel, 44

W

^WA, set antenna parameters, 103
^WE, set wireless encryption values, 104
web authentication timeout value, 102
web pages
  accessing home page, 64
  add alert message, 82
  advanced setup, 71
  alert setup, 81
  calibration, 70
  directory listing, 77
  general setup, 68
  media setup, 70
  network configuration screens, 72
  primary/secondary device, 73
  print listings on label, 69
  print server settings, 86
  printer controls, 84
  problems accessing with wired IP address, 61
  serial communication setup, 68
  set timeout value, 102
  SMTP, 74
  SNMP, 73
  TCP/IP, 74
  view and modify printer settings, 67
  view printer configuration, 66
  wireless encryption setup, 76
  wireless setup, 76
  ZPL control, 71

WebView web pages, 63
WEP mode
  configuring print server for WEP, 115
  setting authentication type via wlan.wep.auth_type, 208
  setting encryption index via wlan.wep.index, 209
  setting encryption index via ^WX, 116
^WI, change wireless network settings, 106
wired print server
  check for during bootup, 26
  interaction with wireless print server, 25
  ^NB to set check for, 95
  set as primary network device, 26
  using to configure wireless print server, 30
  view or modify settings via web pages, 86
wireless link status indicator, 44
wireless password
  control panel parameters affected, 48, 50
  setting via ^WP, 110
wireless print server
  change network settings, 106
  control panel parameters, 48
  interaction with wired print server, 25
  set as primary network device, 26
  set up via web pages, 76
wireless pulse and interval
  setting via ^WS, 113
wireless radio card
  get card inserted status via SGD, 129
  inserting Compact Flash card and adaptor, 40
  inserting standard card, 38
  printer not acknowledging, 58
  reset via ZPL, 112
  setting values via ^WS, 113
  supported cards, 20
  supported security types, 22
  view firmware version, 165
wireless signal indicators, 44
wireless status indicator lights (HC100), 45
wireless timeout
  enable, 177
  set value, 178
~WL, print network configuration label, 109
^WL, set LEAP parameters, 108
WLAN setup, 19
wlan.adhocautomode, 160
wlan.adhocchannel, 161
wlan.associated, 162
wlan.channel_mask, 163
wlan.essid, 164
wlan.firmware_version, 165
wlan.ip.addr, 166
wlan.ip.arp_interval, 167
wlan.ip.dhcp.cid_all, 168
wlan.ip.dhcp.cid_enable, 169
wlan.ip.dhcp.cid_prefix, 170
wlan.ip.dhcp.cid_suffix, 171
wlan.ip.dhcp.cid_type, 172
wlan.ip.gateway, 173
wlan.ip.netmask, 174
wlan.ip.timeout.enable, 177
wlan.ip.timeout.value, 178
wlan.keep_alive.enable, 179
wlan.keep_alive.timeout, 180
wlan.kerberos.kdc, 181
wlan.kerberos.password, 182
wlan.kerberos.realm, 183
wlan.kerberos.username, 184
wlan.mac_addr, 185
wlan.operating_mode, 186
wlan.password, 187
wlan.preamble, 188
wlan.private_key_password, 189
wlan.roam.interval, 190
wlan.roam.signal, 191
wlan.security, 192
wlan.signal_noise, 201
wlan.signal_quality, 202
wlan.signal_strength, 203
wlan.station_name, 204
wlan.tx_power, 205
wlan.tx_rate, 206
wlan.username, 207
wlan.wep.auth_type, 208
wlan.wep.index, 209
wlan.wep.key_format, 214
wlan.wep.key1, 210
wlan.wep.key2, 211
wlan.wep.key3, 212
wlan.wep.key4, 213
wlan.wpa.psk, 215
^WP, set wireless password, 110
~WR, reset wireless radio card and print server, 112
^WR, set transmit rate, 111
^WS, set wireless radio card values, 113
^WX, configure wireless securities, 115

Z

ZebraNet Alert, 81
ZPL commands, 93

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